



# FLOOD IMPACT ASSESSMENT ON EDUCATION OF CHILDREN AND COPING MECHANISM IN RAJAPUR MUNICIPALITY, BARDIYA DISTRICT

Abhiyanta Karki 1,\* , Laxmi Chhinal 1 , Ajay B. Mathema 1  
1 School of Environmental Science and Management, Pokhara University, Lalitpur

## Introduction

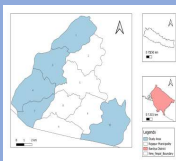
- As per the IPCC SREX report glossary, a flood is when water surpasses natural boundaries or accumulates on land. (Oates, 2007).
- Nepal's flood vulnerability stems from inadequate planning, settlement disorganization, and deforestation compounded by land use changes and defenses. (Sholihah *et al.*, 2020).
- Rajapur municipality situated in the western terai region of Nepal, is highly susceptible to flooding due to its location between the Karnali and Geruwa rivers (National Planning Commission (NPC), 2017)
- SDG goal 4 emphasizes quality education as essential for simpler lives, intelligence growth and mitigating disaster impacts on children's schooling. (Madavanhu, 2015).
- Coping involves conscious responses to stress, distinct from automatic defense mechanisms, aiming to reduce stress (de Boer, Buwalda and Koolhaas, 2017).

## Objectives

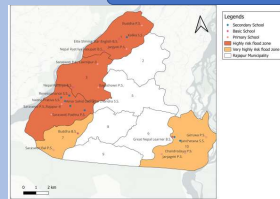
- To analyze the status of the infrastructure of school.
- To analyze the effect of flood on academic performance of students.
- To estimate the number of students drop out after flood.
- To assess the current practices of coping mechanism to mitigate the impact of flood on education sector.

## Materials and Methods

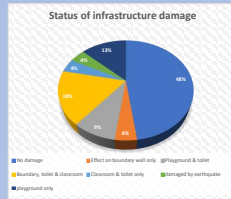
- Rajapur Municipality, located around 527 kilometres (km) to the west of the nation's capital, Kathmandu, in the Terai region of Lumbini Province.
- Wards 1, 3, 4, 7 and 10 were chosen for the study. Total of 23 schools were located in a very highly and highly flooded area (LDCRP, 2021).
- Census data in study area
- Primary data collection
- Focus Grouped Discussion with parents and subject teachers
- Key Informant Interview with principal
- GPS location of schools
- Secondary data collection
- Published publication, libraries, documents, reports, thesis, journals and websites.
- LDCRP, 2021 of Bardiya district
- Integrated Education Management Information System (IEMIS) data of schools
- Data from engaged agency in coping mechanism



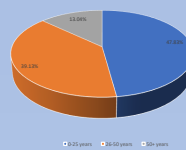
## Results and discussion



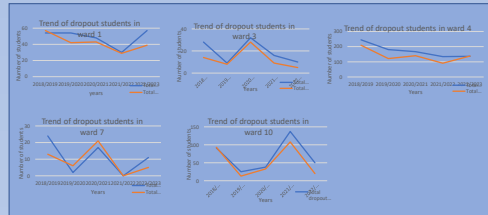
Flood Scale	Primary School	Basic School	Secondary School
Very highly risk flood	6 PS	3 BS	6 SS
Highly risk flood	4 PS	2 BS	2 SS



Age of school buildings

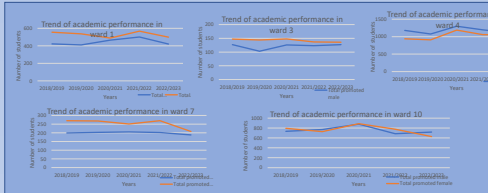


- Among 23 schools,
- 11 schools were under 25 years
- 9 schools were under 26-50 years
- 3 schools were above 50 years
- BCI Construction's report: Building lifespan ranges 30-50 years, with maintenance suggested for structures nearing 50.



Dropouts rate in last five years

- In ward 1: 7.01% male & 5.57% female dropout rate
- In ward 3: 8.76% male & 5.71% female dropout rate
- In ward 4: 8.85% male & 8.21% female dropout rate
- In ward 7: 3.55% male & 2.55% female dropout rate
- In ward 10: 5.64% male & 4.55% female dropout rates



Repeaters and promoters rate in last five years

- Ward 1:
  - Promotion rates: 62.03% (male) & 70.33% (female)
- Ward 3:
  - Promotion rates: 55.85% (male) & 65.62% (female)
- Ward 4:
  - Promotion rates: 57.12% (male) & 60.58% (female)
- Ward 7:
  - Promotion rates: 65.46% (male) & 71.70% (female)
- Ward 10:
  - Promotion rates: 61.59% (male) & 64.93% (female)

## Adaptive strategy to improve education quality and mitigation measures

- In Rajapur municipality, floods affect both students and teachers. Approximately 43.47% of schools offer extra classes to mitigate flood's academic impact.
- In 2021, Kalika Secondary School in ward no. 1 received funding from the Community Development Project for diverse improvements, including education quality enhancement and infrastructure (Words, 2001).
- Practical Action identifies education resilience sources, addressing disruption, enrollment decline and road access issues, prioritizing "One School for One Municipality" program.
- The images provide crucial flood details, accessible in all Rajapur Municipality schools, enhancing understanding and awareness of flood related issues.
- In ward no. 3, there was constructing a flood resistant building under the President's Educational Reform Program, nearing completion pending municipal approval.
- These kind of flood resilience school infrastructures should be build in the highly risk flood area.



## CONCLUSION

- Even minor floods in Rajapur municipality significantly hinder students academic performance, resulting in increasing dropout rates annually.
- Students in Rajapur municipality often engage in income generating activities to support their families. Situated near the India-Nepal border, many youths prioritize earning in India over education.
- School's coping mechanisms proved insufficient in improving academic performance and reducing student dropout rates following floods.

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Thesis for the Degree of Master of Science in Environmental Science and  
Management

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CHILDREN AND COPING MECHANISM IN RAJAPUR  
MUNICIPALITY, BARDIYA DISTRICT**



**Abhiyanta Karki**

**P.U. Registration No: 2021-1-25-0001**

**Exam Roll No: 21250027**

**School of Environmental Science and Management (SchEMS)**

**Faculty of Science and Technology**

**Pokhara University, Nepal**

**January, 2024**

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**Supervised by Ms. Laxmi Chhinal**

A thesis submitted in partial fulfillment of the requirements for the degree of  
Master of science in Environmental Science and Management

**Abhiyanta Karki**

**P.U. Registration No: 2021-1-25-0001**

**Exam Roll No: 21250027**

**School of Environmental Science and Management (SchEMS)**

**Faculty of Science and Technology**

**Pokhara University, Nepal**

**January, 2024**

## Declaration

I, Abhiyanta Karki, hereby declare that this project paper entitled, **FLOOD IMPACT ASSESSMENT ON EDUCATION OF CHILDREN AND COPING MECHANISM IN RAJAPUR MUNICIPALITY, BARDIYA DISTRICT** is my original work and has not been submitted anywhere else for any academic award. All literature, data, or works done by others and cited within this report has been given the acknowledgment and listed in the reference section.

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Abhiyanta Karki

P.U. Registration no: 2021-1-25-0001

January, 2024

## **Recommendation**

The thesis attached hereto entitled “**FLOOD IMPACT ASSESSMENT ON EDUCATION OF CHILDREN AND COPING MECHANISM IN RAJAPUR MUNICIPALITY, BARDIYA DISTRICT**” was prepared and submitted by **Abhiyanta Karki** in partial fulfillment of the requirement for the Degree of Master of Environmental Management under my supervision and is hereby accepted.

.....

Ms. Laxmi Chhinal

School of Environmental Science and Management (SchEMS)

January, 2024

## Certificate

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.....

Ms. Laxmi Chhinal

Supervisor

School of Environmental Science  
and Management

Date:

.....

M.Sc. Program Coordinator

School of Environmental Science  
and Management

Date:

.....

Mr. Manjeet Dhakal

External Examiner

Date:

.....

Associate Prof. Mr. Ajay Bhakta

Mathema

Principal

School of Environmental Science  
and Management

Date:

## Letter of Approval

This dissertation paper submitted by Ms. Abhiyanta Karki entitled “**FLOOD IMPACT ASSESSMENT ON EDUCATION OF CHILDREN AND COPING MECHANISM IN RAJAPUR MUNICIPALITY, BARDIYA DISTRICT**” has been accepted for the partial fulfillment of Master of Science in Environment Management from Pokhara University.

.....

Associate Professor Ajay Bhakta Mathema

Principal

School of Environmental Science and Management

January, 2024

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Abhiyanta Karki

January 2024

## Acronyms

BCI	Building Construction Industry
BCPR	Bureau of Crisis Prevention Recovery
BIPAD	Building Information Platform Against Disaster
CDP	Community Development Project
CSS	Comprehensive School Safety
DMS	Disaster Management System
FGD	Focus Group Discussion
GHG	Green House Gases
GIS	Geographic Information System
GoN	Government of Nepal
GPS	Global Positioning System
IEMIS	Integrated Education Management Information System
IPCC SREX	Intergovernmental Panel on Climate Change Special Report
INGO	International Non-governmental Organization
KII	Key Informant Interview
LDCRP	Local Disaster Climate Resilience Plan
M	Mean
MHM	Menstrual Hygiene Management
NGO	Non-Governmental Organization
PR	Precision-Recall
ROC	Receiver Operating Characteristics
RTE	Right To Education
SD	Standard Deviation
SDG'S	Sustainable Development Goals
SMOTE	Synthetic Minority Oversampling Technique
SSTR	School Student Teacher Ratio
STR	Student Toilet Ratio
UDHR	Universal Declaration of Human Rights
UNDP	United Nations Development Programme
UNFCCC	United Nation Framework on Climate Change Convention

WAM

West African Monsoon System

WMO

World Meteorological Organization

## **Abstract**

Rajapur Municipality of Bardiya district is one of the major flood prone areas of Nepal. The Municipality is situated in between the two arms of the Karnali River and has a long history of flooding. The seasonal and unseasonal floods in Karnali and Geruwa river makes the community highly vulnerable. One of the major impact of floods can be observed in education sector so, this study highlights the impact of flood on education of children of Rajapur Municipality. Flood has cause significant impact on education quality and the learning environment of students. This study observed the impact of flood particularly in 23 schools (16 government and 7 non-government) within Rajapur municipality. Among 10 wards of Rajapur municipality this study includes ward no. 1, 3, 4 ,7 and 10. In ward no. 3, there is a concerning trend of high rates of male and female student repeaters after the flood which has led to a decline in academic performance over the last five years, emphasizing the urgent need for interventions and support systems to address this educational challenge. Simultaneously, ward no. 4 faces a distinct issue with the highest dropout rates after flood among both male and female students. From FGD and KII, economic crises after flood within families, household responsibilities and disinterest in subjects contribute significantly to this trend.

The coping strategies employed, relocating furniture and securing school items during the rainy season have been practiced. Addressing these challenges requires a multifaced approach, integrating infrastructure upgrades, educational support programs and community engagement. The creation of tailored interventions, considering the specific needs of each ward and school building, is crucial for revitalizing the educational landscape post-floods and ensuring sustained academic growth for the children in Rajapur Municipality.

**Keywords:** *Academic performance, Coping Strategies, dropout rate, Education, flood, repeaters rate, Rajapur Municipality*

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# CHAPTER 1

## INTRODUCTION

### 1.1 Background

According to the IPCC SREX report glossary the flood is defined as "the overflow of a stream or other body of water beyond its natural boundaries or an accumulation of water on terrain that is not typically submerged (Oates, 2007). When it results in harm or negative consequences for people lives, livelihoods, and/or property, it turns into disasters. One of the disastrous events that affects the majority of nations and results in the greatest number of fatalities is flooding (Ghapar, Yussof and Bakar, 2018). When a crisis strikes, it will disrupt crucial services including healthcare, energy, water, transportation and communication. These interruptions will have a negative impact on the local communities and nation's economies, social systems and health. The flood is one of many different sorts of calamity that frequently occurs in various countries. Flooding continues to rank as the third-worst calamity in the world, according to the World Meteorological Organization (WMO) (Ibrahim and Mishra, 2021). Due to damages that disasters inflict, many business sectors and public organizations have attempted to develop policies, frameworks, and methods for coping with catastrophes in the future by tackling these disasters in a methodical and deliberate manner (Norio *et al.*, 2011). A disaster management (DMS) refers to the process of creating the appropriate plans ahead of time before a disaster occurs (Maharashtra Institute of Technology, Institute of Electrical and Electronics Engineers. Pune Section and Institute of Electrical and Electronics Engineers, no date). The Global Climate Risk Index 2021 shows Nepal as one of the most likely countries to be affected by climate change, ranking 12 out of 180 countries (Eckstein, Kunzel and Schafer, 2021).

The effects of floods can be widespread and devastating, impacting various aspects of human life, the environment, and the economy. More than ten thousand people were died from different types disaster worldwide in 2017, where nearly half of the top events occurred on the Asian continent and many of them were caused by significant inundation and landslide in India, China, Nepal, Sri Lanka, and Bangladesh (Pangali Sharma *et al.*, 2019). Flood hazard in Nepal is appearing as most devastating due to improper land use plan, unplanned settlement distribution (Rimal *et al.*, 2018), deforestation at upstream in watershed (Ives and Messerli, 1981). Floods are caused by a variety of factors, according to Kodoatie and Syarief, including changes in land use, waste management,

erosion and sedimentation, slums along rivers, inadequate flood control systems, high rainfall, river physiography, insufficient river capacity, the effects of high tides, land subsidence, water structures, and damage to flood control structures (Sholihah *et al.*, 2020).

UNDP/BCPR (2004) ranks Nepal as the 20th most vulnerable country to multiple hazards. Flash floods are becoming more common in Nepal as a result of climate change, causing huge damage in terms of fatalities, injuries, and habitat destruction in riverine villages (Gautam and Dong, 2018). Rajapur, situated in the western terai region, is highly susceptible to flooding due to its location between the Karnali and Geruwa rivers. The widespread monsoon flooding in 2017 had a major impact on the entire terai area of Nepal. The instability and seasonal flooding of the riverbanks have role in causing land erosion in Rajapur (National Planning Commission (NPC), 2017). Rajapur municipality of Bardiya district of Nepal is regarded as one of the major flood-prone areas, with substantial flooding practically every year, as well as having the most disadvantaged and marginalized communities (Sharma, 2021).

Flooding has an extensive impact on physical, social, economic and environmental aspects. Among these, education stands out as a crucial factor for people's livelihoods. In the Rajapur, flooding disrupted schools, causing extended closures. Therefore, this study focuses on the social aspects, specially the intense effect of flooding on children's education. A comprehensive and effective learning environment that equips students with the knowledge, abilities, and attitudes they need to thrive in life is referred to as providing a quality education. The right and necessity for children-the foundation of the country's future to get a proper education are indisputable. The Sustainable Development Goals (SDG'S) goals number four also mentions quality education. For people to have slightly simpler lives and become smarter, education is a basic need. Children are affected by disasters in a variety of ways, from full disruption to a negative effect on attendance and academic performance at school (Mudavanhu, 2015).

The definition of coping is the thinking and acting out of stressful events, both internal and external(Folkman and Moskowitz, 2004). It is a phrase used to refer to behaviors that are consciously and voluntarily mobilized, as opposed to "defense mechanism," which are subconscious or unconscious responses that both try to decrease or accept stress(de Boer, Buwalda and Koolhaas, 2017). Coping styles, a collection of comparatively consistent features that influence an individual's behavior in reaction to stress, are the many ways in which people choose

to cope with stressors. Coping styles are the different ways in which people choose to cope with stress. They remain the same across time and under many circumstances (Venner, 1988). An individual's "method of acting within the available resources and ranges of expectations of a situation to achieve various ends" is referred to as their "coping mechanism." As a result, the community's coping strategies are a way of resolving issues while still utilizing its resources. Coping strategies are largely created to prevent and make up for losses or damages brought on by the flood threat (Blaikie, P., Cannon, T., Davis, I. and Wisner, 1994).

## **1.2 Statement of problem**

The economic loss due to flood disaster is notably high in Nepal. In addition, rugged mountain topography, the fragile geology with high-intensity monsoon rainfall is making Nepal more vulnerable to flood (Elalem and Pal, 2015). Rajapur is highly vulnerable due to the heavy rainfall and long-term flood during the monsoon and pre-monsoon period. Article 26 of the Universal Declaration of Human Rights (UDHR), states that everyone has the right to an education. Education must be free at the primary and fundamental levels. Education must be orientated towards the full development of the human personality as well as the reinforcement of respect for human rights and fundamental rights (Chatterjee, 2011).

According to 2018, there are 29 elementary schools (1-5), 9 district level schools (1-8), 6 secondary schools (1-10), and 6 upper secondary schools (1-12) in Rajapur municipality in fiscal year 2017. Students of Rajapur specially from ward no. 1,3,4,7 & 10 are facing the flooding from long time ago. Ward no. 1,3,4 are categorized in highly risk flooded zone and rest of remaining 7 & 10 are categorized as very highly risk flood zone according to the LDCRP report, 2021 of Rajapur, Bardiya (LDCRP, 2021). Schools are closed for an extended amount of time as a result of the flood, which will have an impact on school performance and may lead to an increase in the rate of student dropouts for a variety of reasons. So, it appears to be well researched in the education sector in Rajapur municipality, where school buildings are prone to flooding.

## **1.3 Research questions**

1. What is the status of the infrastructure of the school?
2. How do the academic performance of students been affected by flood?
3. What is the number of students drop out due to flood?
4. What coping techniques are used to lessen the impact on the education sector?

## **1.4 Objectives of the study**

### **1.4.1 General objectives**

To study the impact of flood on education by school mapping and coping mechanism in Rajapur Municipality, Bardiya.

### **1.4.2 Specific objectives**

- To analyze the status of the infrastructure of school.
- To analyze the effect of flood on academic performance of students.
- To estimate the number of students drop outs.
- To assess the current practices of coping mechanism to mitigate the impact of flood on education sector.

## **1.5 Rationale of the study**

A flood is a type of natural disaster that happens when a region is immersed in water, typically as a result of intense rainfall, snowmelt, or the overflow of rivers and other water bodies. Existing outdated schools, as well as governmental and private infrastructure, were frequently built in the Bardiya district without seeking technical advice, placing them at a significant danger of being destroyed by an earthquake (Bardiya, 2016). The years 1983, 1994, 2005, 2014, 2017, 2021, and 2022 in Bardiya's flood history have left the region in utter ruin. According to BIPAD data, there will be 2 flood-related fatalities and 2 flood-related losses in 2022 (DDMC, 2023).

Children and young people are severely affected by a disaster. Additionally, it adds to the expense of the global educational systems, particularly in underdeveloped nations (Habiba *et al.*, 2021). In light of the fact that education is a fundamental human right and is mentioned in the Sustainable Development Goals (SDGs) four, it is clear that this is the most important thing we can do to improve ourselves in life. Floods leave a trail of ruin in the education sector, which may result in children's education being destroyed to the point where it cannot be restored. If school buildings are used as evacuation centre, schooling may be cancelled, pupils may drop out, and school absenteeism may arise. An example in point is the Cambodia floods, which occur at the start of the academic year from July to December, and lead students and teachers to miss school due to safety concerns. Using boats raises the cost of going to school, which many parents are unable to afford (Ardales *et al.*, 2016). According to Nepalese national statistics, the literacy rate in Rajapur is 77.1%, with 82.6% of males and 72.2% of females. To better understand the impact of floods

and coping mechanisms in Rajapur, Bardiya, it is important to look at the education sector. Wards 1, 3, 4, 7 & 10 are chosen since the school buildings in those locations are located in very highly and highly risk flood zones.

### **1.6 Limitation of study**

- Students response was not recorded due to exam season.
- Due to the long delays between the event and data collection there was possibility of recall bias or memory distortion.
- Schools only represent very highly severely and highly severely flood-prone zones, therefore they do not represent the educational status of the entire Rajapur municipality.
- Academic performance might not be same individual students.

## Chapter 2

### LITERATURE REVIEW

#### 2.1 Climate change and its induced disaster

Disaster risk reduction and climate change are intertwined. Future occurrences of extreme weather are projected to increase the frequency and magnitude of disasters, but at the same time, the techniques and instruments already in use to reduce disaster risk also offer strong capacity for coping with climate change. The majority of people understand the term "climate change" to refer to the altering of the planet's climate that humans are responsible for, as a result of burning fossil fuels, clear-cutting forests, and other activities that raise the level of greenhouse gases (GHG) in the atmosphere. This is consistent with the UNFCCC's official definition of climate change, which is a shift that can be ascribed "directly or indirectly to human activity that modifies the composition of the atmosphere or other(Todd and Todd, 2021). "Climate change" is defined by the International Panel on Climate Change (IPCC) as "a change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer (Arbeitskreis Energie in der DPG, 2007)."

The enormous scope of the challenge needed to prevent global warming to 1.5°C was underlined by IPCC in 2018. Five years later, a continuous rise in greenhouse gas emissions has made that challenge even more difficult. To address climate change, more needs to be done than has been planned and at the current pace and scale. Burning fossil fuels for more than a century, together with unequal and unsustainable land and energy use, has resulted in 1.1°C of global warming above pre-industrial levels (Panel *et al.*, 2023). Numerous industries, including agriculture, the availability of water, and public health are impacted by climate variability and climate change. These effects could leave a society highly vulnerable, depending on its potential for adaptation. As a result of the West African Monsoon System (WAM), one of the primary factors affecting climate (Yaro and Hesselberg, 2016).

## **2.2 Impact of flood on education**

### **2.2.1 Global Context**

The Comprehensive School Safety (CSS) framework was used in the study project by senior lecturer Jonatan Lassa and his team in 2022 to evaluate the infrastructure for high-quality learning and education. This study combined qualitative and quantitative methods to investigate the experiences of 100 Jakartan schools. Between 1997 and 2018, there were six significant floods in Jakarta that briefly halted social and economic activity. The floods that occurred in 1997, 2002, 2007, 2013, 2018, and 2019 were considered to be major. A mean of 4.62 (SD=3) days of school closures were experienced by pupils in this study, ranging from 1 to 12 days. Between 1 and 14 days following the floods, classes began (M=4.48, SD=3.3). The majority of pupils who delayed returning to class claimed that their uniform was either misplaced or got soiled or damp. Only 19% returned to school right away, leaving 61% to wait. What they did following the floods was unclear to the remaining 20%. Seven of the 21 students claimed to have misplaced their personal items, including their shoes, books, and notebooks(Lassa, Petal and Surjan, 2023).

In his paper, Chipu Mudavanhu stated that "disasters result in disruptions in school children's learning, loss of contact hours, high rates of absenteeism, and loss of skilled people, harming the quality of education in Zimbabwe. Disasters also impair all education-related campaigns in the majority of developing nations. However, despite claims that flood catastrophes have a significant negative influence on children's learning and development, this research found that measures to lessen the effects are frequently insufficient and inappropriate. Children who live in disaster-prone locations are not sufficiently catered for by the educational system. Flood disasters have been reported to be particularly dangerous for schoolchildren and the surrounding infrastructure, threatening their entitlement to a good education (Mudavanhu, 2015).

Iranian schools' sensitivity to flooding was damaged in the provinces of Chaharmahal and Balhtiari. Decision-makers must act quickly because 39% of schools are located in areas that are highly susceptible to flooding. Compared to schools in urban settings, rural schools are more vulnerable to flooding. In the province, 86,640 students are enrolled in schools that are located in areas with a very high risk of flooding. Decision-makers should increase public knowledge and awareness of the hazards faced by schools and students in addition to relocating schools in risky

areas. To increase readiness for flood events, this study recommends holding exercises and simulations in rural regions and schools (Yousefi *et al.*, 2020).

The security and safety of children has been compromised in Sindh, Pakistan, during the flood as all attention has been directed towards the relief and rapid rehabilitation efforts for flood victims. These kids' heightened sensitivity to security risks is a result of their lack of activities. For them, non-formal educational services have been provided by some NGOs. Numerous children have missed two years of education, according to this survey. People affected by the flood used schools that were unaffected by it as shelter. These refugees severely destroyed the school's infrastructure, including the furniture that was used as firewood. Without a complete reconstruction, there is little way that these schools might be used for educational purposes. Approximately 11,906 schools, which are attended by more than a million children, have been impacted, either being utilized as refuge (2,674 schools in Sindh) or being damaged (9,232 schools) in Sindh. Malaria and water-borne diseases are both causes for concern (Muhammad Saleem Chang, Shahneela, 2013).

This study shows that in locations that are prone to flooding and where schools were built without sufficient flood-resilient measures, flooding is one of the causes interfering with the completion of study programs and compromising the quality of present education. It is difficult to get to school because of the flooding-related road damage. Some kids decide to drop out of school to work for their families as a result of their financial difficulties. Additionally, throughout that time, the absenteeism rate rose. Some of the facilities were utilized as shelters in case of emergencies or as places to store rice seeds. For an average of 7 to 14 days after moderate flooding, the school is closed. During flood years, it may occasionally be extended to 20–30 days (Beg, 2014).

### **2.2.2 Overview in Nepal**

The Jaleswor study in Mahottari identified flood-induced disruption as a key factor affecting secondary school learning environments. Weak school infrastructure instilled fear among students, impacting their ability to concentrate on studies and leading to increased dropout rates. Damaged infrastructure, coupled with financial constraints, compelled some students into early marriages or labor activities during school closures, diverting their focus from education (Chaudhary and Timsina, 2018).

## CHAPTER 3

### MATERIALS AND METHOD

#### 3.1 Study area

Rajapur Municipality, located around 527 kilometres (km) to the west of the nation's capital, Kathmandu, in the Terai region of Lumbini Province of having 28,607 male and 32,224 female population out of 60,831 is the chosen study area. The research region is bordered by the Uttar Pradesh state of India in the south, the Kailali district and Geruwa Rural Municipality in the east, and two branches of the Karnali River that are prone to flooding in the west. It is situated between 142 and 154 meters above sea level, covering an area of 127.08 km<sup>2</sup>, and is geographically constrained by latitudes 28°21'25.16"N to 28°29'43"N and longitudes 81°03'25.63"E to 81°12'52"E (Source: LDCRP, 2022). Wards 1, 3, 4, 7 and 10 were chosen for the study because they are close to the Karnali River branch that originates on the Tibetan plateau, flows through Nepal, and eventually meets the Ganges in India. According to the LDCRP, 2021 a total of 23 schools were located in a highly and moderately flooded area.

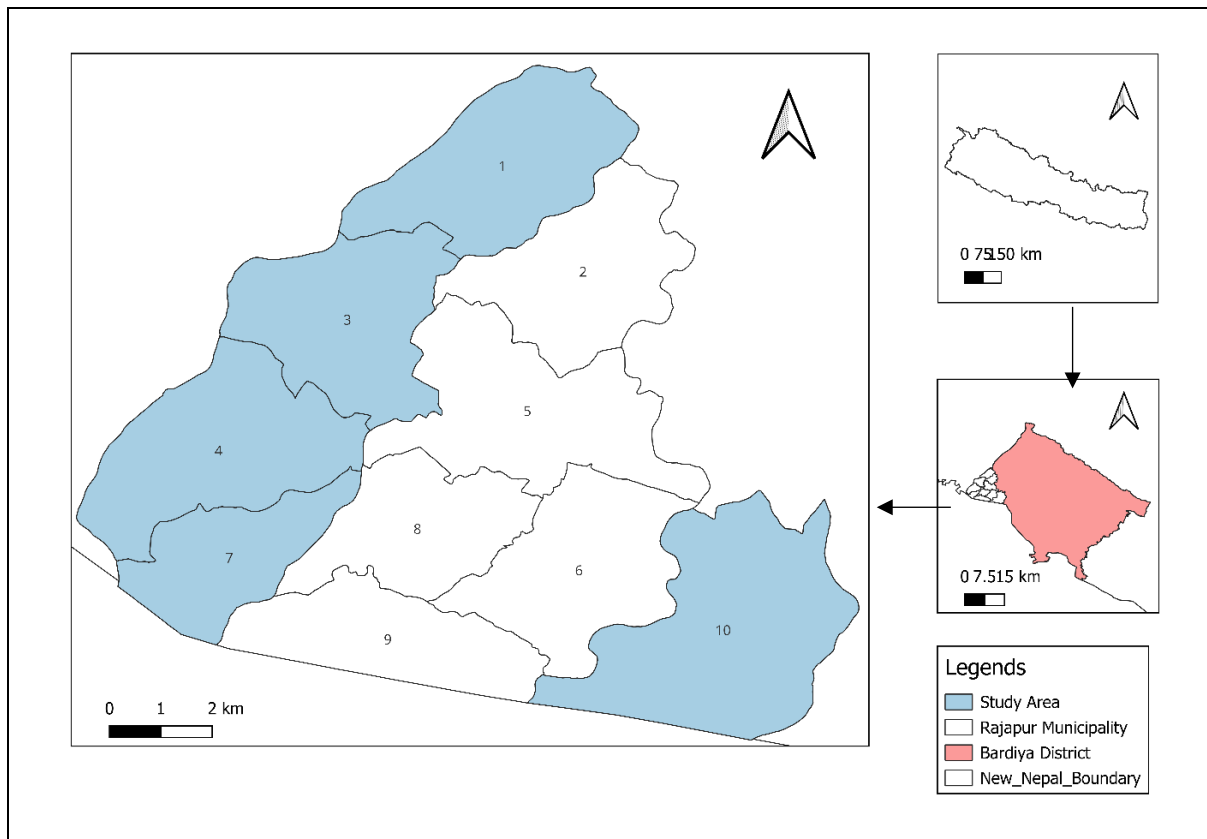


Figure 1: Map of study area

### 3.2 Research design

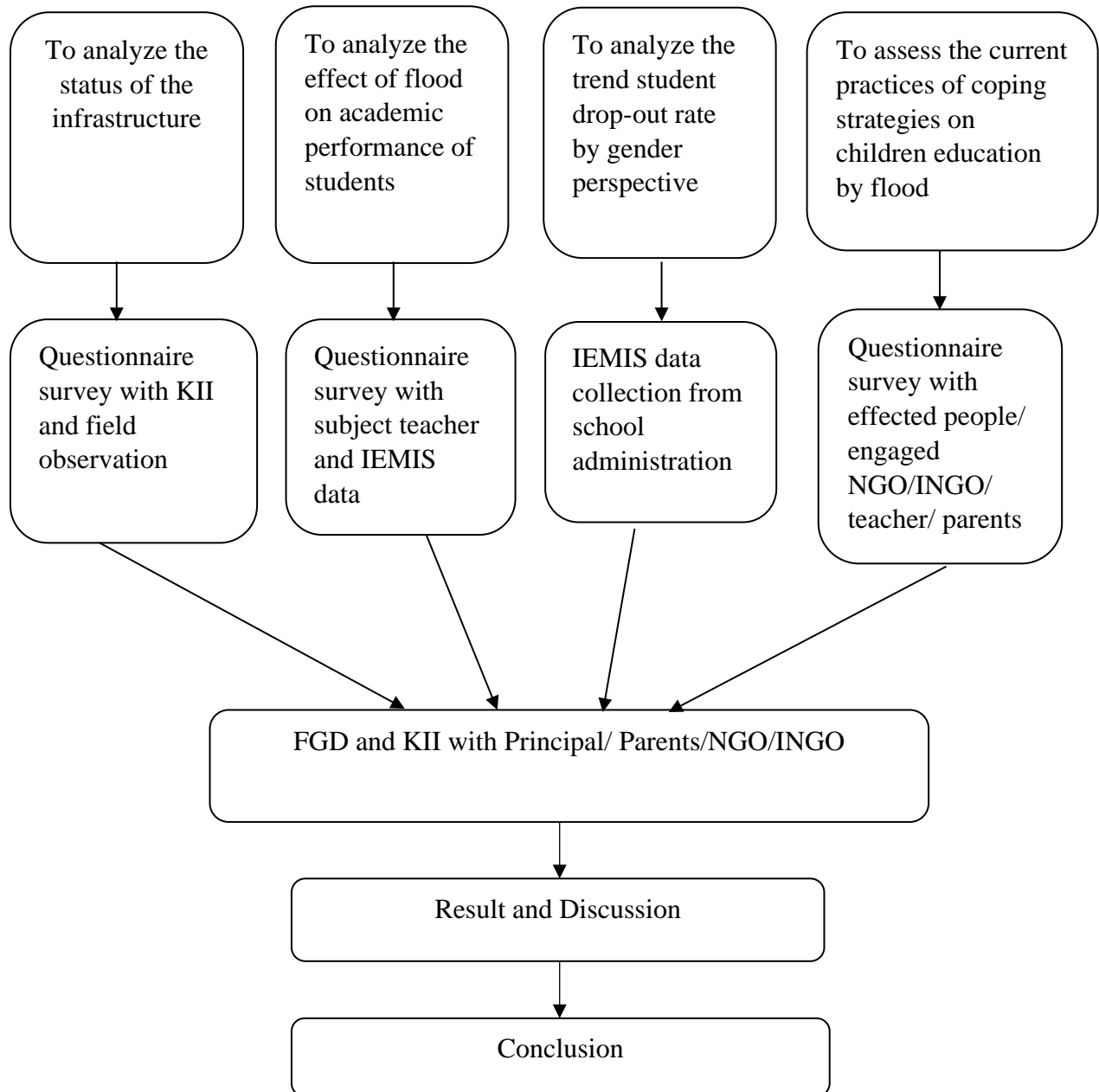


Figure 2: Research Design

## **3.2 Research method**

### **3.2.1 Primary data collection**

Fieldwork is essential for gathering primary data. At the school level, information was acquired using questionnaire-based interviews. Because they are the ones who are immediately affected by the flood, information was acquired directly from respondents in order to obtain correct information. In addition, Focused Group Discussions (FGD), Key Informant Interviews (KII), and in-depth interviews with flood-affected children and teachers were collected. The GPS coordinates of each affected school was recorded in order to do school mapping.

### **3.2.2 Secondary data collection**

Secondary data sources were included published publications, libraries, documents, reports, theses, journals, and websites. The LDCRP, 2021 is used to extract the status of schools during the flood events that were affected. The IEMIS (Integrated Educational Management Information System) where information such as the number of students, teachers, the school's catchment region, the number of male and female students and teachers, academic performance of students, and so on were recorded. Existing practices for mitigating the impact of floods on education was acquired from NGO/INGOs already working in that field.

#### **3.2.2.1 Integrated Educational Management Information System (IEMIS)**

A system called the Integrated Educational Management Information System (IEMIS) has been put in place to gather, process, analyze, store, publish, and use education data at the school level. Devi Vidyalaya, the local government, the Ministry of Science and Technology, the resource development center, and their coordination and cooperation have been implementing and facilitating this system for a considerable amount of time.

Every school has a nine-digit school code (first two digits are the district, followed by the three-digit Savik's village Development Council or Municipal, and the final four are the school). If a university does not have an excel file, it can use it locally for free.

This Excel will be maintained by the university, and should it be lost for any reason, the university will be responsible for maintaining it. In the event that a new Excel file is needed, the university will be able to use it locally for free, but they will lose three years' worth of data. It is not possible

to utilize a universities excel to save data because each university has its own Excel file (CEHRD, 2015).

### **3.2.3 Data analysis**

According to the LDCRP, a survey was undertaken involving twenty-three schools, including both private and public schools. This comprehensive endeavor, utilizing census data collection methods, sought to offer a thorough and representative comprehension of the impacts of flooding on academic institutions. This research was looking at the impact of flooding on education and the coping mechanisms that have emerged in that sector. All replies from the school survey, focus group, and KII was transcribing for data analysis. In this research KII were principals of schools and subject wise teacher of last grade was interviewing i.e. purposive sampling. The information was organized and categorized according to the following themes: school name, location, number of students and teachers by gender, school category (primary/secondary/higher), number of dropout students, and number of students who move away. This research paper used GIS to do geographic analysis on acquired data. The GPS location data from the school is transformed into a point shapefile. The analysis was carried out using attribute data gathered from the school administration. The analysis findings were displayed in the form of maps. The datum for these maps will be WGS 84, and the projection system was UTM Zone 44/45N. Information about the impact of the flood on academic performance was acquiring from school records in order to differentiate the pass rate and qualitative data was analyzing. The existing coping mechanism that has been implemented was analyzing qualitatively.

## CHAPTER 4

### RESULTS AND DISCUSSION

#### 4.1 Results

##### 4.1.1 School Mapping

School mapping refers to a set of tools and procedures used to plan the demand for school seats at the local level, as well as to decide on the location of future schools and the resources to be provided at the institutional level. It has also been defined as a combination of methodologies and approaches to education with a geographical focus at its centre. Its origins can be traced back to France, where efforts were required to supply extra secondary schools in a reasonable, accessible, and cost-effective manner. It concentrates on local conditions, limits, and solutions. The school mapping process has three stages: i) an in-depth diagnosis of local educational services and the condition of the school network; ii) projecting the number of students to be enrolled in each village, ward, and district in light of national policy objectives; and iii) preparation of proposals or the local operational plan for educational service re-organization (Galabawa, Agu and Miyazawa, 2002). School mapping is an important part of web GIS in education sector. According to (Al-hanbali, Al-kharouf, and Bilal, 2003), "School Mapping is the art and science of building geospatial databases with relational databases of educational directorates to support educational planners and decision makers."

##### 4.1.1.1 School Location and school category Map

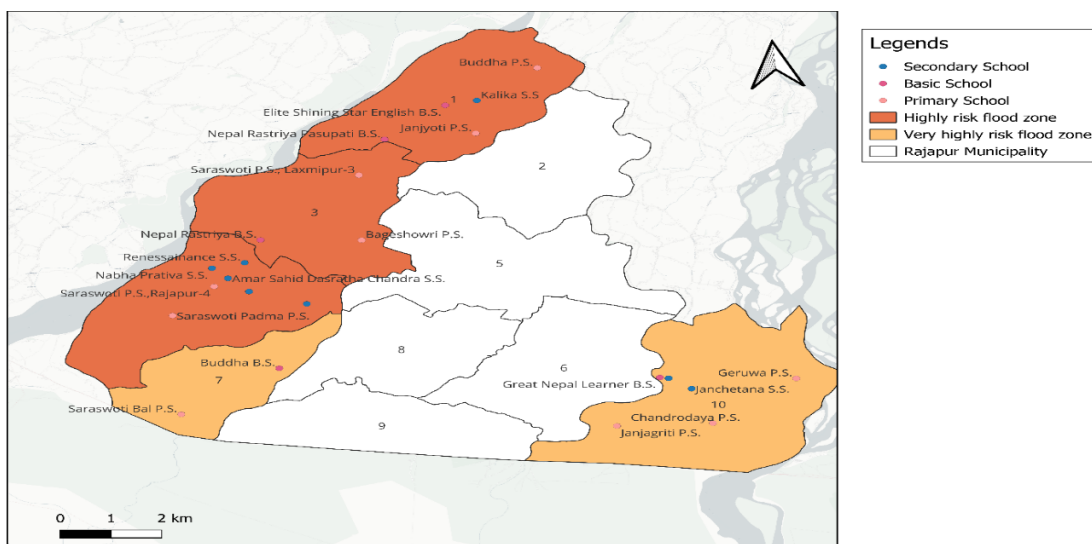
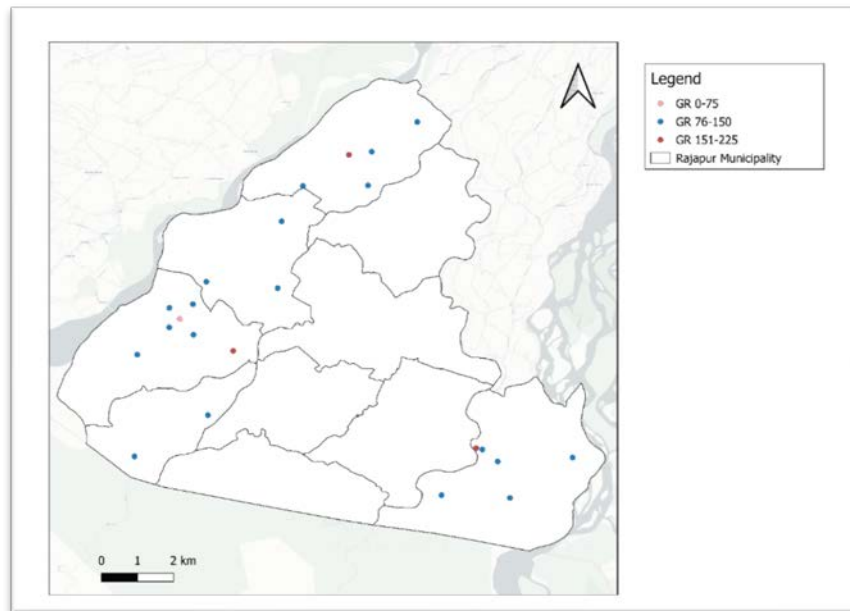


Figure 3: Map of school location

This figure is showing the position of schools that are collected through GPS based field survey. The data collected through GPS is exported to point shapefile. Each school is labelled by its name. This figure is also showing the category of each school which is given on the basis of the number of class. As per RTE, the school category is primary if it is only from class 1 to 5, primary with upper primary for class 1 to 8, secondary with class from class 1-10, higher secondary with class 1 to 12. It is clear from this map that primary schools make up the majority of the institutions. Out of 23 schools in Rajapur, there are two primary schools, one basic school, and one secondary school located in ward 1, two primary schools, one basic school, and five secondary schools located in ward 4. Three primary school, one basic school & two secondary school.

#### 4.1.1.2 Student Gender Ratio Map

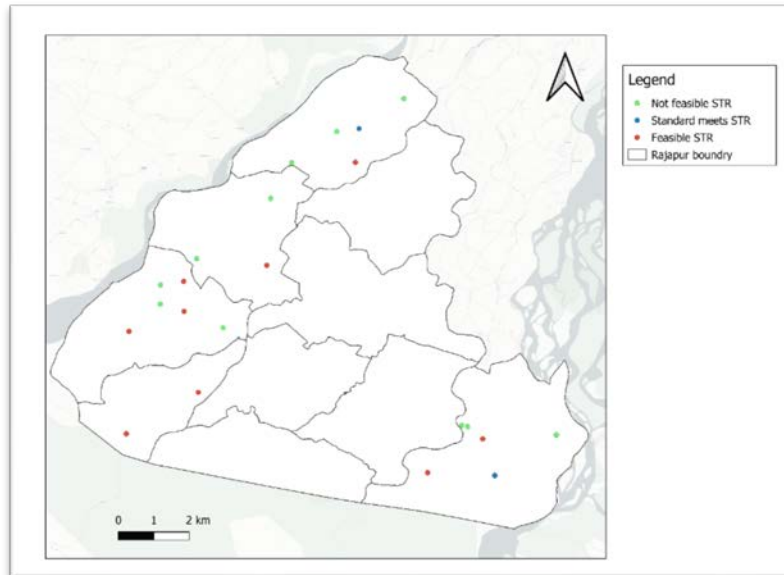


*Figure 4: Map of Student Gender Ratio*

This figure is showing the gender ratio of each school. Gender ratio is calculated by dividing the number of males by the number of females and multiplying by 100. A value above 100 means there are more males than females in the population. As the female literacy is lower than the male literacy in the study area, this map can help in identifying the schools where there is need to promote female literacy in order to reduce imbalance. Out of 23 schools in study area 1 school have the more female students than the males which is representing in pink in color, 19 schools

has more males than female in the ratio of 76-150 represents by blue in color, 3 schools has more males than the previous 19 schools which is represent by the red color in the map.

#### 4.1.1.3 School Student Teacher Ratio Map



*Figure 5: Map of School student Teacher Ratio*

This figure shows the student teacher ratio of each school. As per Flash report-I, 2011-2015, School Student Teacher Ratio (SSTR) ought to be 32:1, 36:1 and 48:1 at primary, basic and secondary level respectively in every school (Centre for Education and Human Resource Development, Ministry of Education, 2019). From the research investigations it is found that out of 23 schools, only 2 schools are meeting this standard ratio which is shown by the blue color in the map. It is evident from the map that at many schools this ratio is not maintained. It can be used to identify the schools where there is a need to employ more teachers. The schools with green are almost meets the standards but feasible. The schools with red in color are those where there is an urgent need of teachers.

#### 4.1.1.4 School Toilet Student Ratio Map

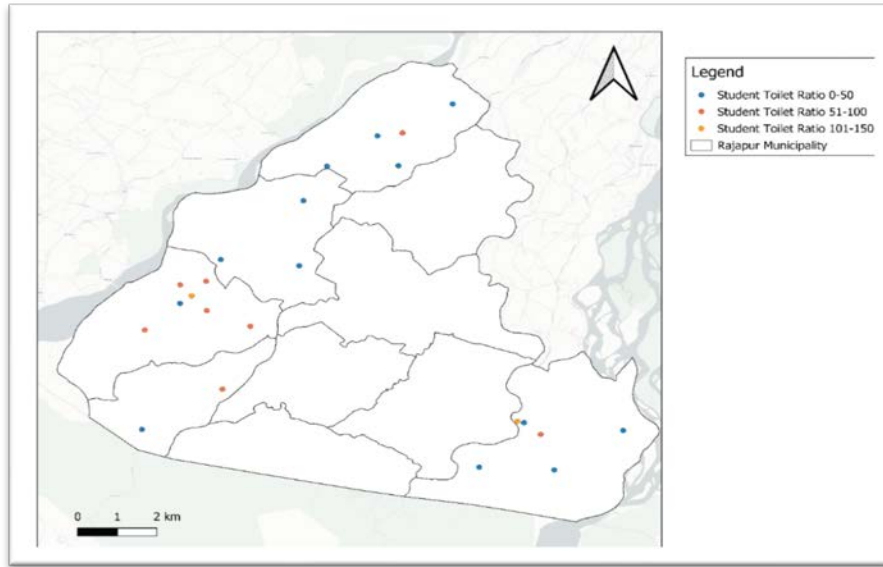


Figure 6: Map of School Toilet Student Ratio

There is a direct relation between the students and the basic facilities like water, toilets, electricity etc. This figure is showing the toilet student ratio of each school. As per the GoN, School Toilet Ratio (STR) is 50:1, i.e. there must be one toilet per fifty students. Out of 23 schools, 13 schools are meeting the standard ratio which are shown by the blue in color in the map. At 8 schools there is 1 toilet on 51 to 100 students which are shown by the orange color in the map, at 2 schools there is 1 toilet on 101 to 150 students which are shown by the yellow color in the map. Thus, there are many schools that have an urgent need to build more toilets as shown in the map.

#### 4.1.2 Status of infrastructure damages in school building

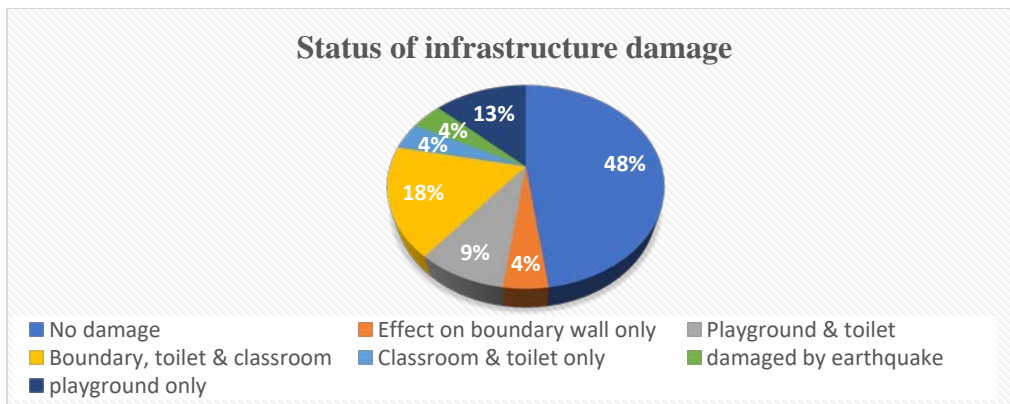


Figure 7: Status of infrastructure damage

Among the 23 schools in study area, 48% infrastructure was not damage by the flood in previous year. 13% of the playground of the school was damaged, 4% of the classroom & toilet was damaged by the flood or the rain water during rainy season. 4% of the infrastructure was damaged by the previous earthquake in 2072 BS which was still not completely maintain. 18% of the boundary, toilet & classroom was damaged. 9% of the playground & toilet was damaged by the flood during the rainy season. Only 4% of the boundary was damaged by the flood.

#### 4.1.2.1 School building use as safe shelter

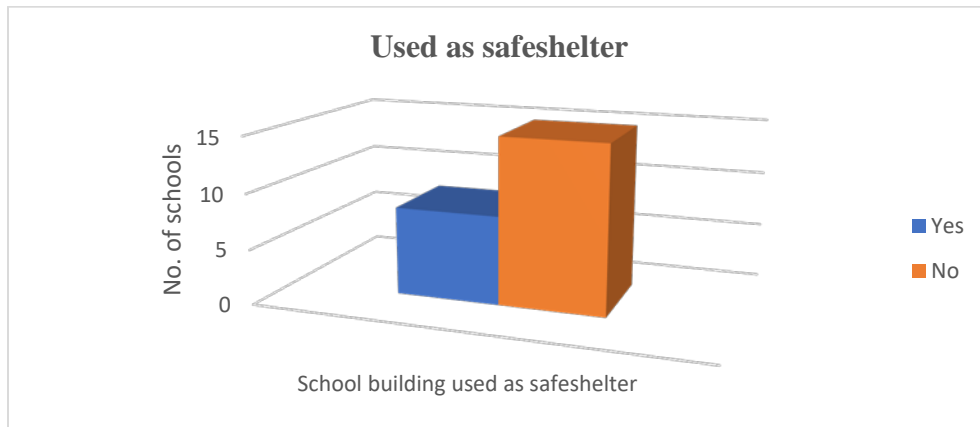


Figure 8: Status of school building use as safe shelter

Among 23 schools, 8 schools were used as safe shelter during flood and remaining 15 schools were not used as safe shelter during flood. During the flood 9 schools were closed maximum one weeks, 2 schools were closed maximum two weeks, 8 schools were not closed and 4 school were deciding according to the water level.

#### 4.1.2.2 Age of school buildings according to established year

Table 1: Age of schools building according to the established year

Range	Number of schools
0-25 years	11
26-50 years	9
50+ years	3

Among 23 schools in study area, 11 schools were under 25 years, 9 schools were under 26-50 years and 3 schools were above 50 years according to the establishment year which was shown in the pie-chart below.

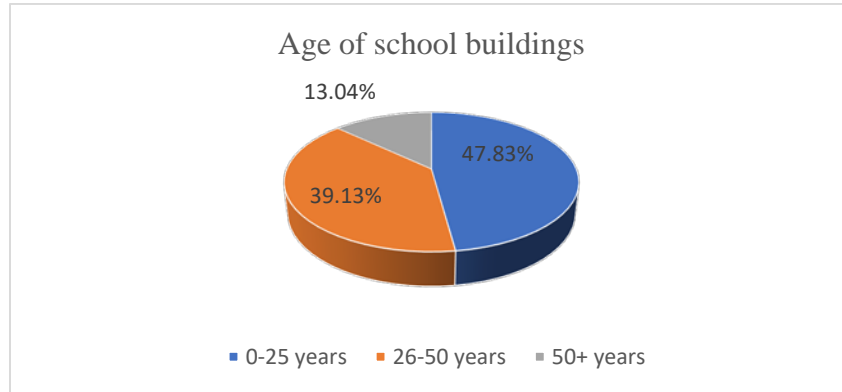


Figure 9: Age of school buildings

**4.1.3 Trend of dropped-out and promoted students after flood by gender perspective of different schools of study area in last 5 years (2018/2019-2022/2023)**

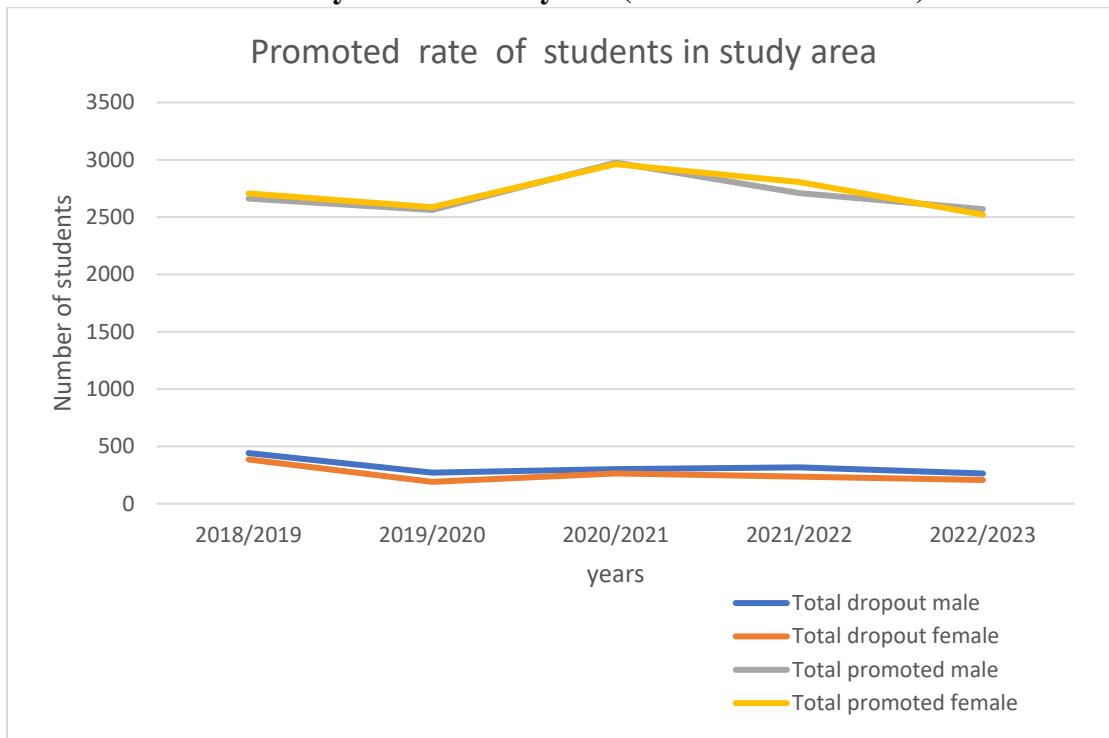
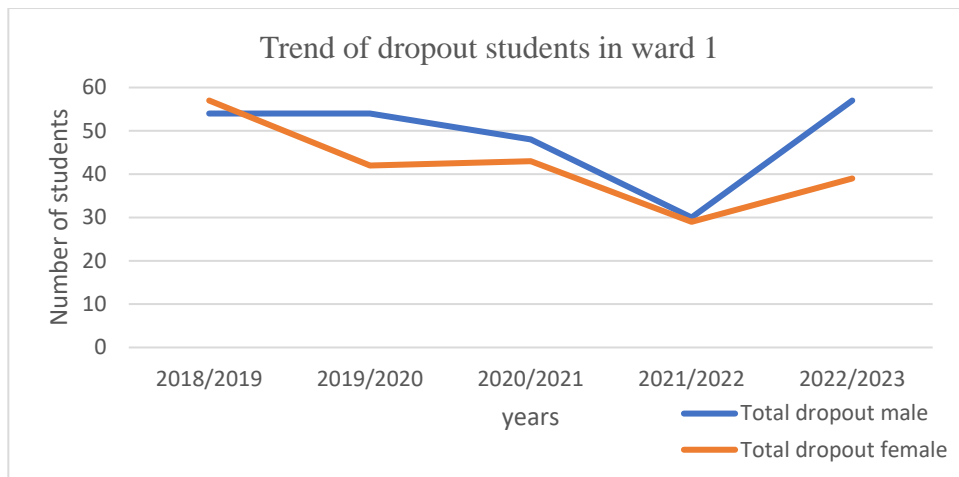


Figure 10: Trend of dropped out and promoted students after flood by gender perspective of different schools in study area

There is a gradual decrease in male dropout numbers from 2018/2019 to 2019/2020. A notable increase occurs in 2020/2021, suggesting a potential impact of external factors such as floods. Female dropout numbers show a decrease from 2018/2019 to 2019/2020. An increase is observed in 2020/2021, aligning with the pattern seen in male dropout numbers during the same year.

Both male and female promotion number exhibits an overall increasing trend, with occasional fluctuations. There is a peak in promoted numbers in 2020/2021 for both genders, indicating that despite the challenges, a significant number of students were promoted.

**4.1.4 Trend of dropped out students after flood in different wards by gender perspective of different schools of study area in last 5 years (2018/2019-2022/2023)**



*Figure 11: Trend of dropped out students after flood in ward no. 1*

The male dropped out students is seen high then the female dropped out students within the year 2018/2019 to 2022/2023 in ward no. 1. The highest no. of dropped out students was seen in year 2022/2023 in which 57 male students and almost 40 female students have dropped out from the 5 school of ward no.1. The trend shows that the female dropped out rate is in decreasing, whereas male dropped out student is in increasing rate within 5 years.

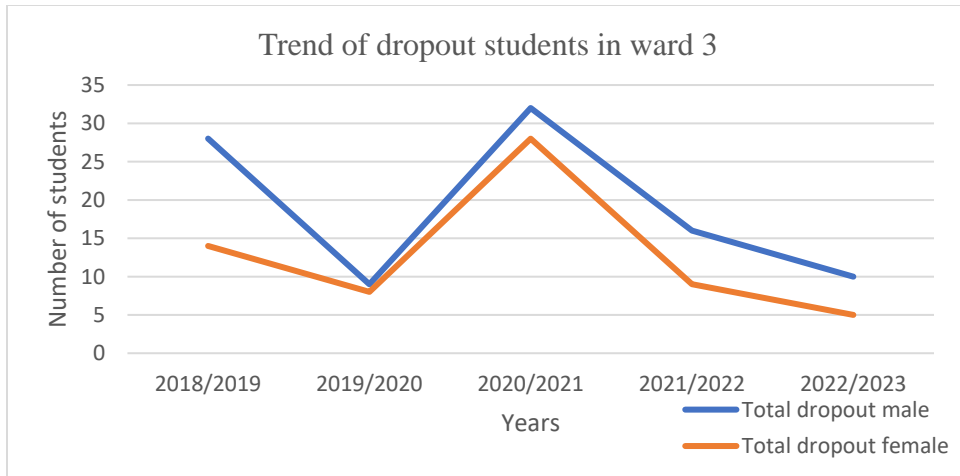


Figure 12: Trend of dropped out students after flood in ward no. 3

The male dropped out students is seen high then the female dropped out students within the year 2018/2019 to 2022/2023 in ward no. 3. The highest no. of dropped out students was seen in year 2020/2021 in which 32 male students and 28 female students have dropped out from the 3 school of ward no.3. The trend shows that the male and female dropped out rate is in increasing at 2020/2021 and sharply decreasing in last two years within 5 years.

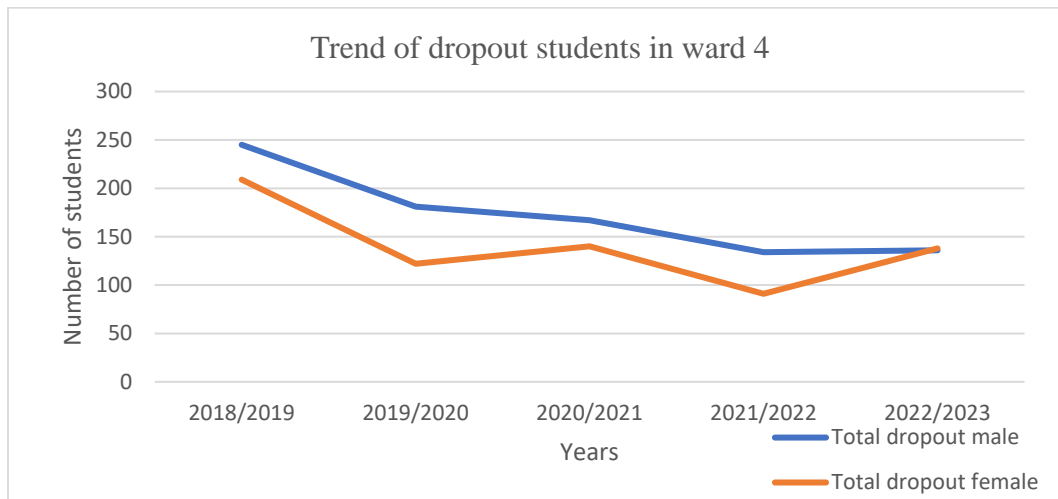


Figure 13: Trend of dropped out students after flood in ward no. 4

The male dropped out students is seen high then the female dropped out students within the year 2018/2019 to 2022/2023 in ward no. 4. The highest no. of dropped out students was seen in year 2018/2019 in which 245 male students and 209 female students have dropped out from the 7 school

of ward no.4. The trend shows that both male and female dropped out rate is in decreasing rate within 5 years, there is a noticeable trend indicating a rise in the male dropped out students compared to their female counterparts.

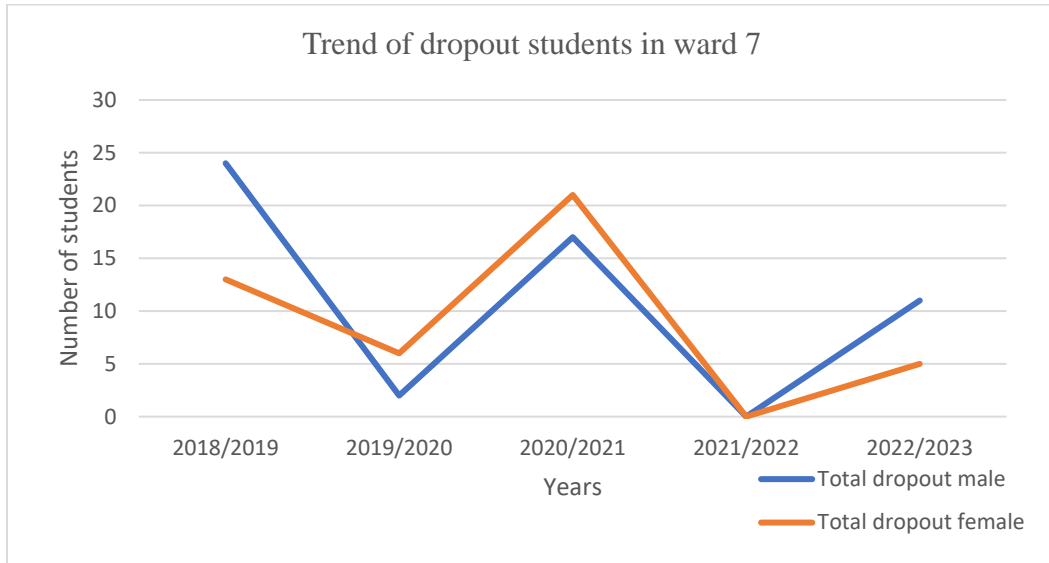


Figure 14 :Trend of dropped out students after flood in ward no. 7

The male dropped out students is seen high then the female dropped out students within the year 2018/2019 to 2022/2023 in ward no. 7. The highest no. of male dropped out students was seen in year 2018/2019 with 24 male students and in year 2020/2021 with 21 female students have dropped out from the 2 school of ward no.7. The trend shows that the female dropped out rate is high in 2020/2021 and sharply decreasing in the last two years, whereas male dropped out student is in decreasing rate within 5 years.

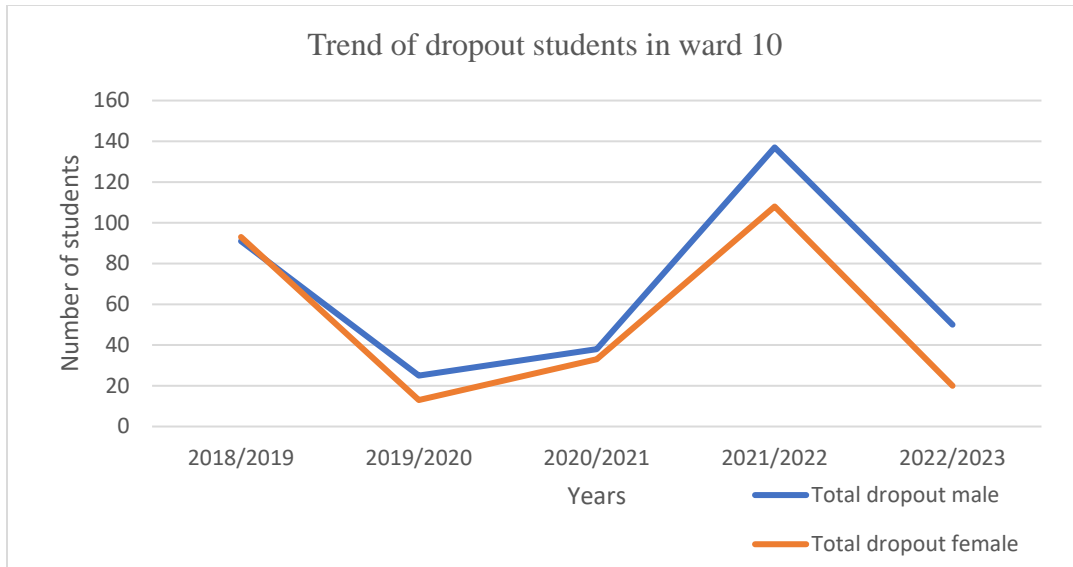


Figure 15: Trend of dropped out students after flood in ward no. 10

The male dropped out students is seen high then the female dropped out students within the year 2018/2019 to 2022/2023 in ward no. 10. The highest no. of dropped out students was seen in year 2021/2022 in which 137 male students and almost 108 female students have dropped out from the 6 school of ward no.10. The trend shows that the male and female dropped out rate is peaked in 2021/2023 then sharply decreasing, whereas male dropped out student is in increasing rate within 5 years in comparison to female dropped out rate.

#### 4.1.5 Trend of promoted students after flood in different wards by gender perspective of different schools of study area in last 5 years (2018/2019-2022/2023)

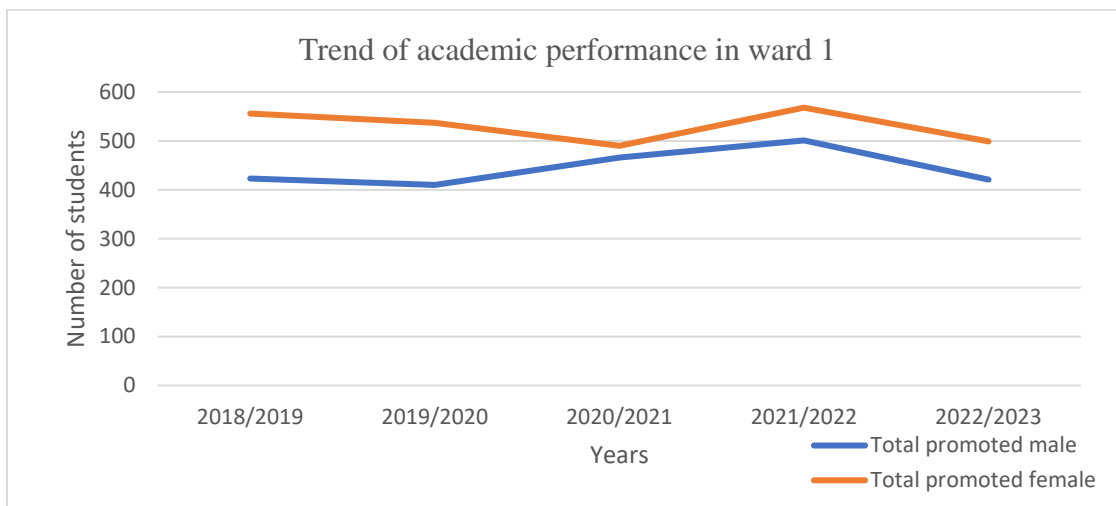


Figure 16: Trend of promoted students after flood in ward no. 1

Between the years 2018/2019 to 2022/2023, female students who are promoted were observed to outnumber their male counterparts in ward no. 1. The peak occurred in 2021/2022, with a total of 501 male students and 568 female students identified as promoters across five schools in ward no. 1. Over the course of five years, there is a noticeable trend indicating a rise in the rate of female promoter students compared to their male counterparts.

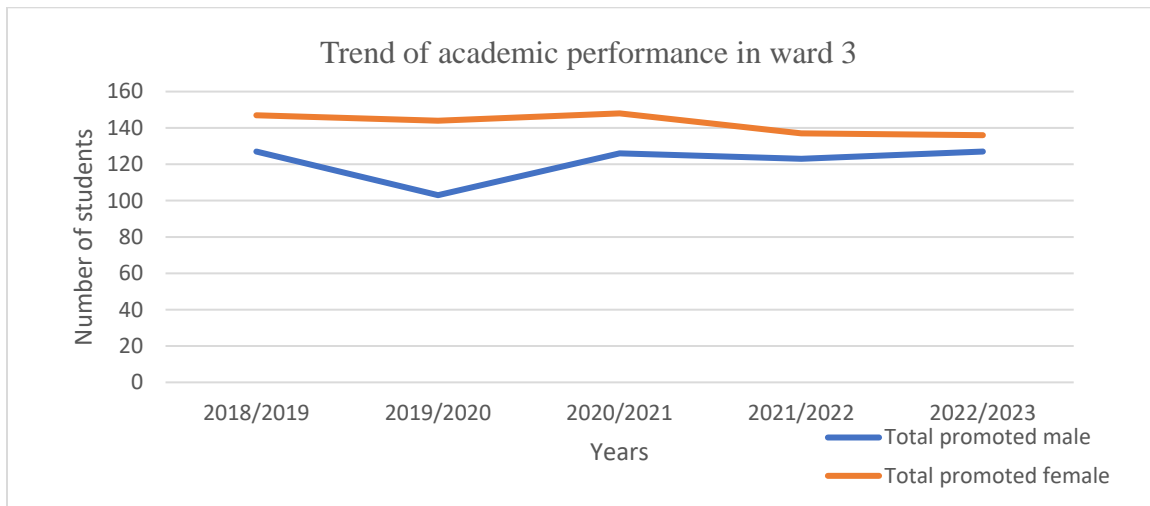


Figure 17: Trend of promoted students after flood in ward no. 3

Between the years 2018/2019 to 2022/2023, female students who are promoted were observed to outnumber their male counterparts in ward no. 3. The peak occurred in 2022/2023, with a total of 127 male students and 148 female students in 2020/2021 identified as promoters across three schools in ward no. 3. Over the course of five years, there is a noticeable trend indicating a fall in the rate of female promoter students, whereas male promoter student is in increasing rate.

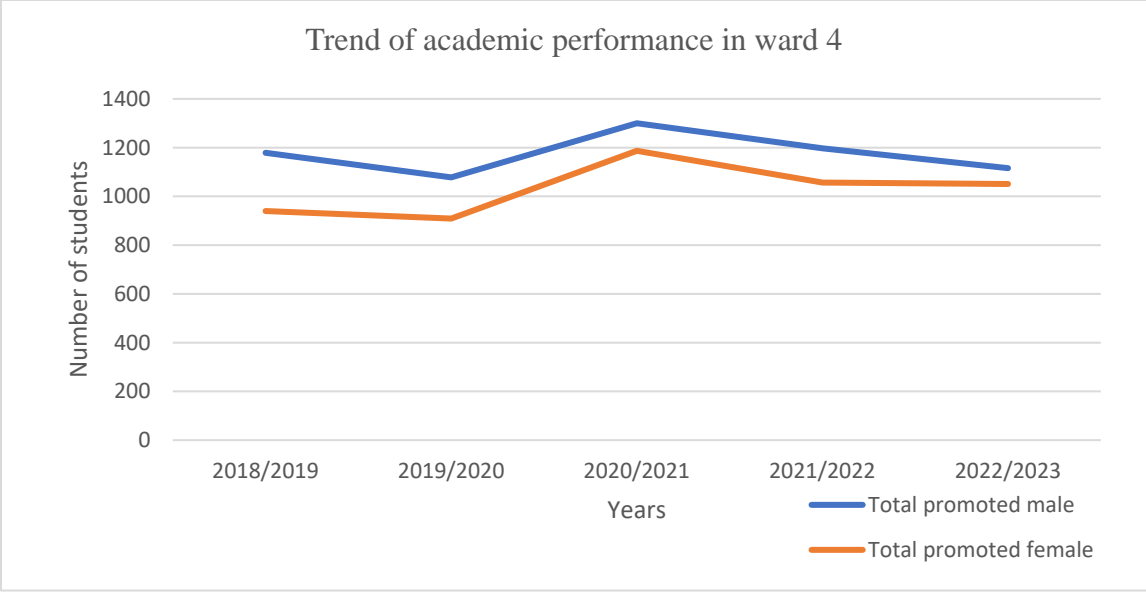


Figure 18: Trend of promoted students after flood in ward no. 4

Between the years 2018/2019 to 2022/2023, male students who are promoted were observed to outnumber their female counterparts in ward no. 4. The peak occurred in 2020/2021, with a total of 1300 male students and 1187 female students in 2020/2021 identified as promoters across seven schools in ward no. 4. Over the course of five years, there is a noticeable trend indicating a fall in the rate of male promoter students, whereas female promoter student is in increasing rate.

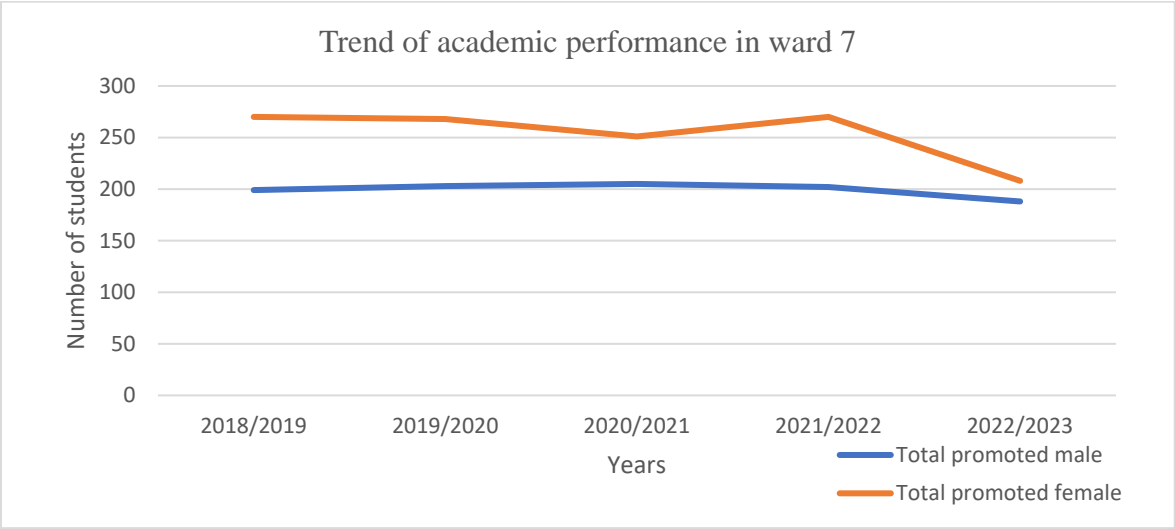


Figure 19: Trend of promoted students after flood in ward no. 7

Between the years 2018/2019 to 2022/2023, female students who are promoted were observed to outnumber their male counterparts in ward no. 7. The peak occurred in 2019/2020, with a total of 205 male students and 270 female students in 2018/2019 and 2021/2022 identified as promoters across two schools in ward no. 7. Over the course of five years, there is a noticeable trend indicating a fall in the rate of female promoter students, whereas male promoter student is in almost constant rate.

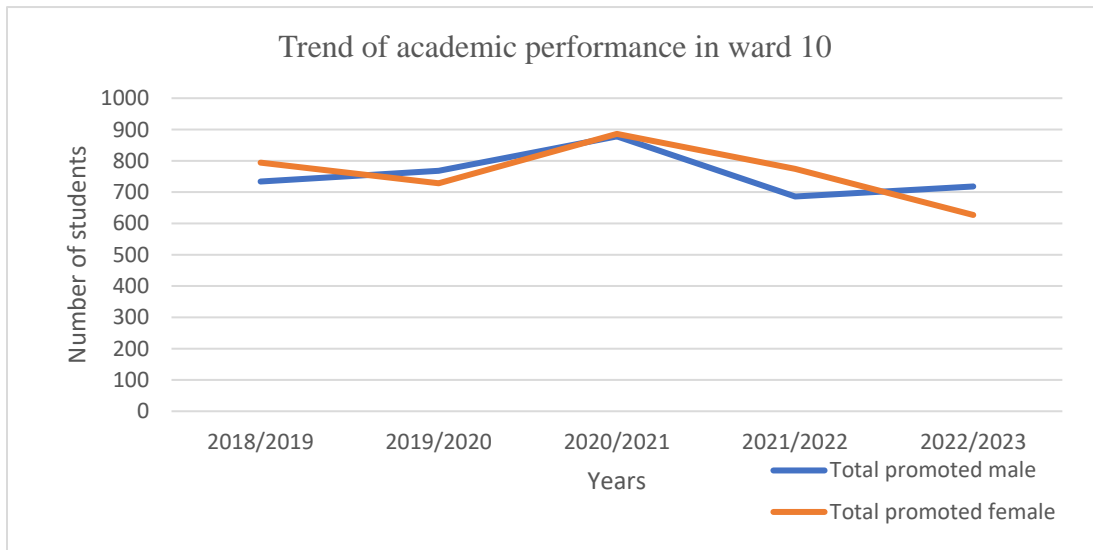


Figure 20: Trend of promoted students after flood in ward no. 10

Between the years 2018/2019 to 2022/2023, female students who are promoted were observed to outnumber their male counterparts in ward no. 10. The peak occurred in 2020/2021, with a total of 878 male students and 886 female students identified as promoters across six schools in ward no. 10. Over the course of five years, there is a noticeable trend indicating a fall in the rate of female promoter students, whereas male promoter student is also in decreasing rate.

#### 4.1.6 Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Secondary Schools

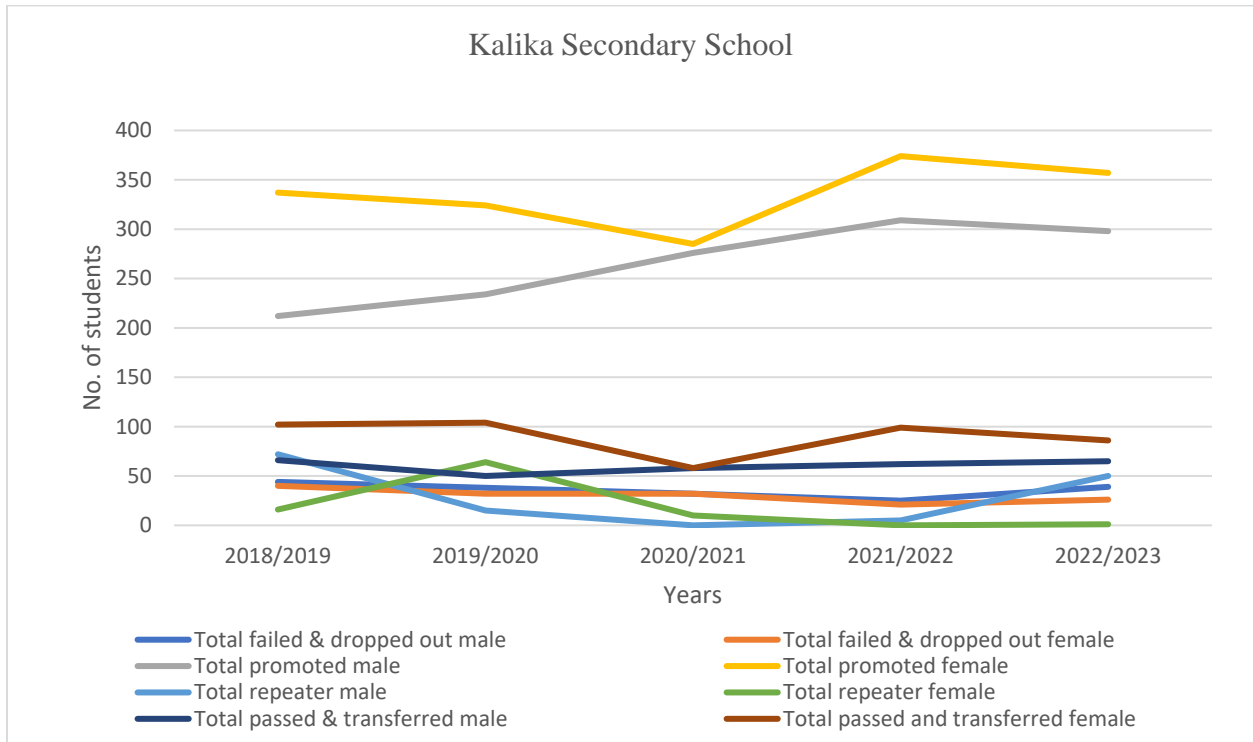
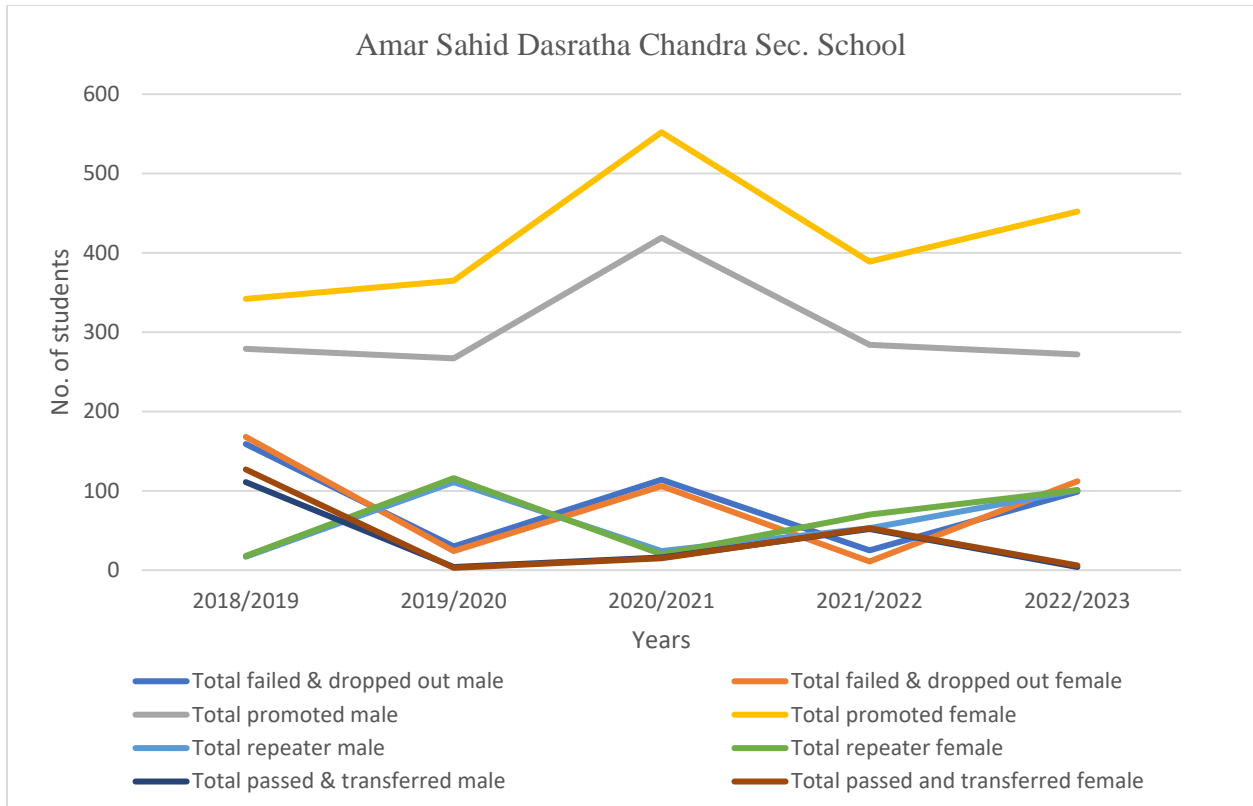


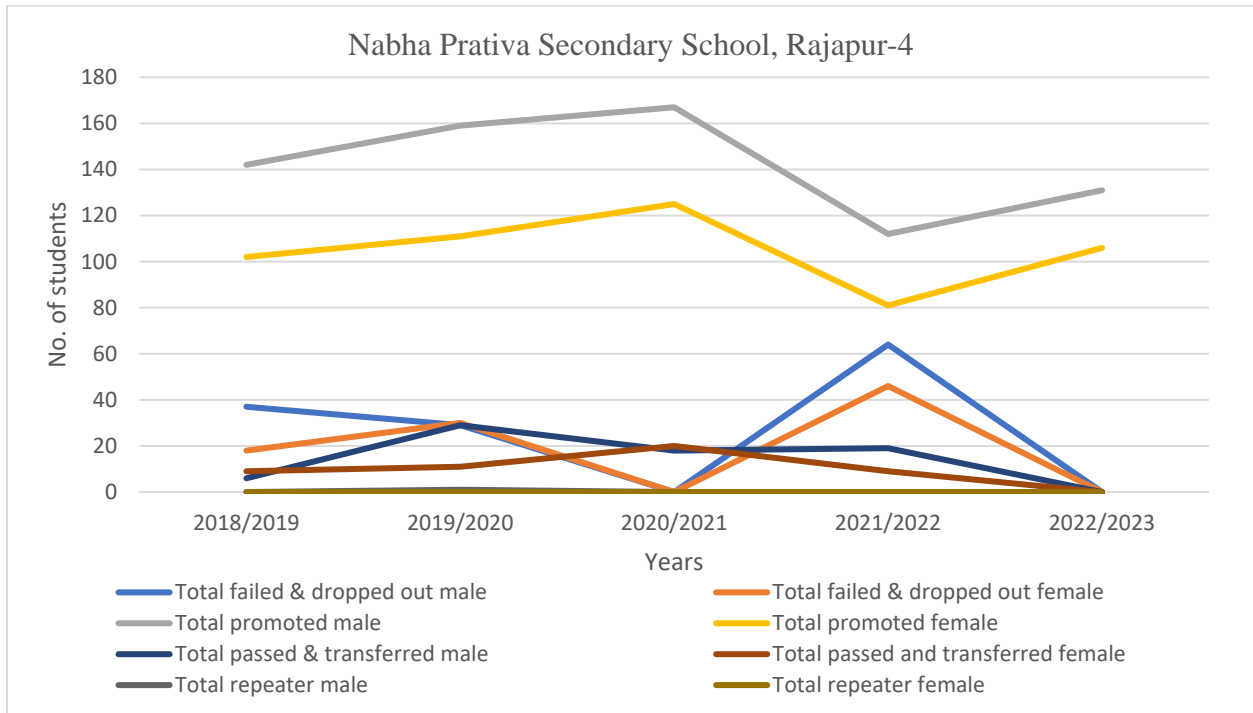
Figure 21: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Kalika Secondary School

The graph reveals trends of failed and dropped out students at Kalika Secondary School, showing the highest number of male students failing or dropping out in 2018/2019 (44 students) and lowest in 2021/2022 (25 students). Female students had the highest failure or dropouts in 2018/2019 (40 students) and the lowest in 2021/2022 (21 students). Male promotions peaked in 2021/2022 (309 students) and hit a low in 2020/2021 (212 students), while female promotions peaked in 2021/2022 (374 students) and hit a low in 2020/2021 (285 students). The greatest number of male repeaters was 72 students in 2018/2019, and no male repeaters were recorded in 2020/2021. Female repeaters peaked at 64 students in 2018/2019 and no female repeaters were recorded in 2020/2021. The highest number of male students passing and transferring occurred in 2018/2019 (66 students), and the lowest was in 2019/2020 (50 students). For females, the peak was in 2019/2020 (104 students), and the lowest was in 2020/2021 (58 students).



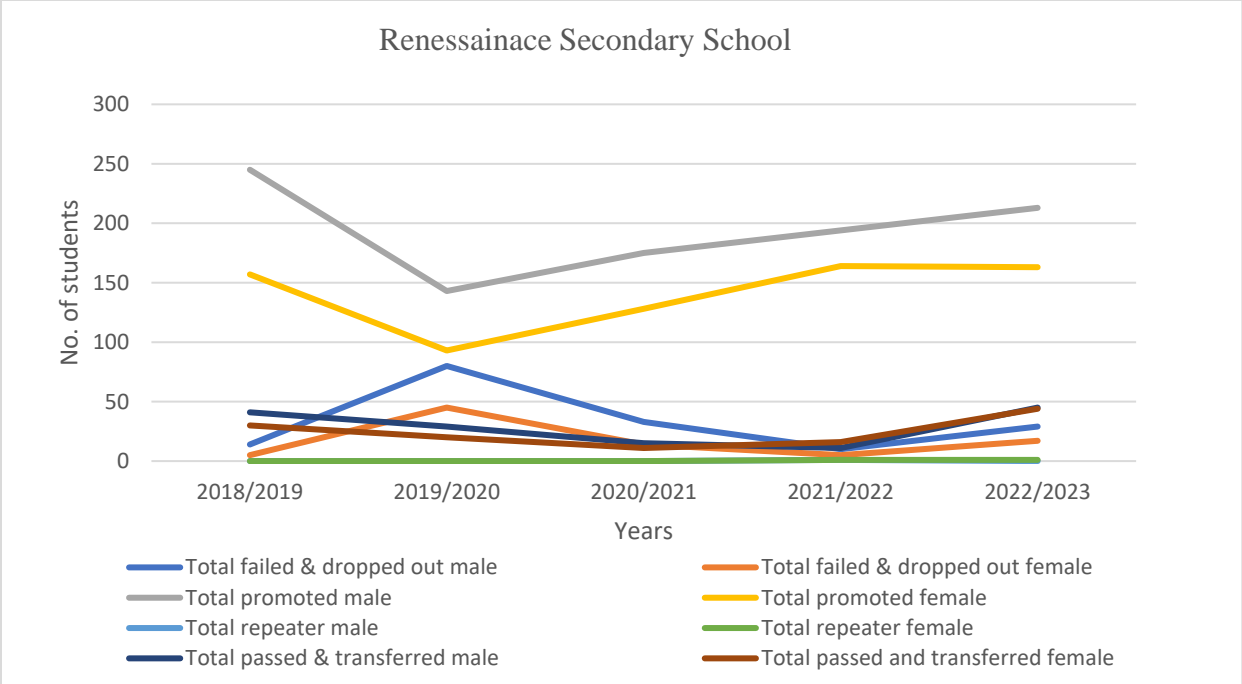
*Figure 22: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Amar Sahid Dasratha Chandra Secondary School*

The graph reveals trends of failed and dropped out students at Amar Sahid Dasratha Chandra Secondary School, showing the highest number of male students failing or dropping out in 2018/2019 (159 students) and lowest in 2021/2022 (25 students). Female students had the highest failure or dropouts in 2018/2019 (168 students) and the lowest in 2018/2019 (11 students). Male promotions peaked in 2020/2021 (419 students) and hit a low in 2019/2020 (267 students), while female promotions peaked in 2020/2021 (552 students) and hit a low in 2018/2019 (342 students). The greatest number of male repeaters was 111 students in 2019/2020, and lowest male repeaters were recorded in 2018/2019 (17 students). Female repeaters peaked at 116 students in 2019/2020 and hit a low of 18 students in 2018/2019. The highest number of male students passing and transferring occurred in 2018/2019 (111 students), and the lowest was in 2019/2020 & 2022/2023 (4 students). For, females, the peak was in 2018/2019 (127 students), and the lowest was in 2019/2020 (3 students).



*Figure 23: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Nabha Prativa Secondary School*

The graph reveals trends of failed and dropped out students at Nabha Prativa Secondary School, showing the highest number of male students failing or dropping out in 2021/2022 (64 students) and lowest in 2020/2021 and 2022/2023 (zero students). Female students had the highest failure or dropouts in 2021/2022 (46 students) and the lowest in 2020/2021 and 2022/2023 (zero students). Male promotions peaked in 2020/2021 (167 students) and hit a low in 2021/2022 (112 students), while female promotions peaked in 2020/2021 (125 students) and hit a low in 2021/2022 (81 students). The greatest number of male repeaters was 1 student in 2019/2020, and no male repeaters were recorded in remainder of the year. There was not a single female repeating students in this school. The highest number of male students passing and transferring occurred in 2019/2020 (29 students), and the lowest was in 2022/2023 (0 students). For, females, the peak was in 2020/2021 (20 students), and the lowest was in 2022/2023 (0 students).



*Figure 24: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Renessaince Secondary School*

The graph reveals trends of failed and dropped out students at Renessaince Secondary School, showing the highest number of male students failing or dropping out in 2019/2020 (80 students) and lowest in 2021/2022 (10 students). Female students had the highest failure or dropouts in 2019/2020 (45 students) and the lowest in 2019/2020 (5 students). Male promotions peaked in 2018/2019 (245 students) and hit a low in 2019/2020 (143 students), while female promotions peaked in 2021/2022 (157 students) and hit a low in 2019/2020 (93 students). The greatest number of male repeaters was 1 student in 2021/2022, and no male repeaters were recorded in remainder of the year. Female repeaters peaked at 1 student in 2021/2022 & 2022/2023 and no female repeaters students were recorded in remainder of the year. The highest number of male students passing and transferring occurred in 2022/2023 (45 students), and the lowest was in 2021/2022 (11 students). For, females, the peak was in 2022/2023 (44 students), and the lowest was in 2020/2021 (11 students).

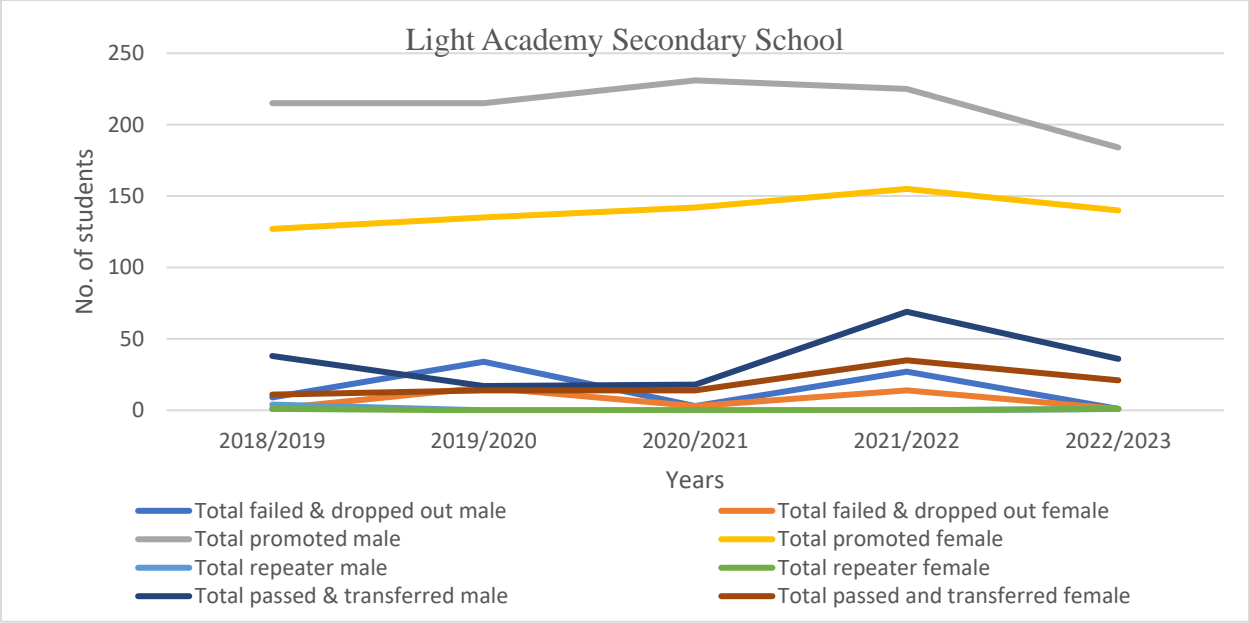
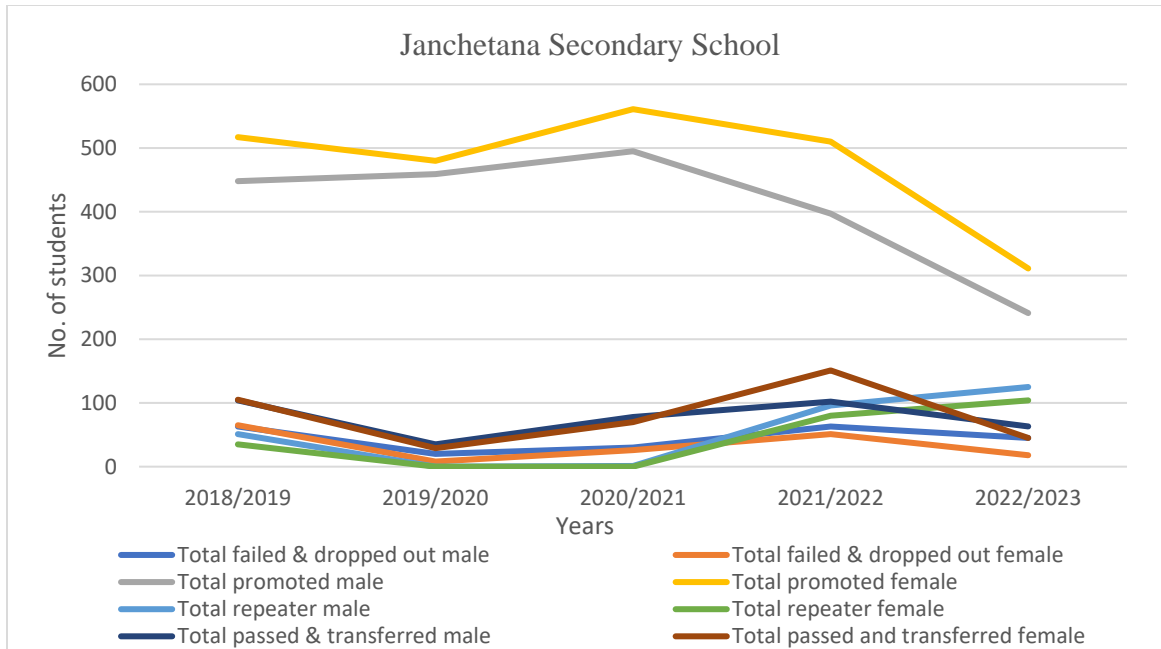


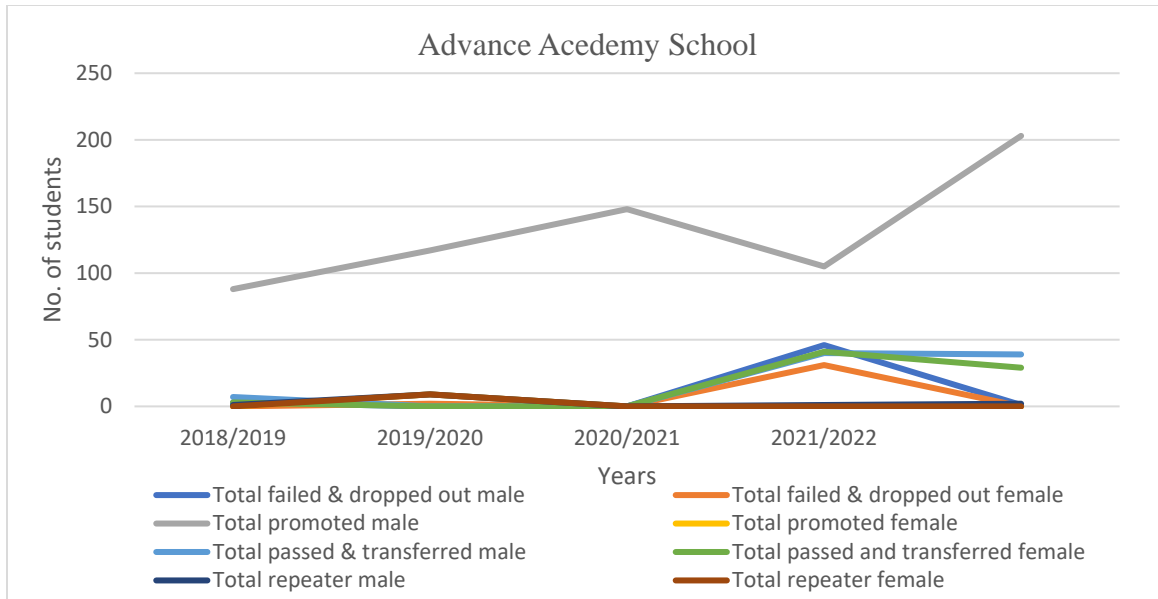
Figure 25: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Light Academy Secondary School

The graph reveals trends of failed and dropped out students at Light Academy Secondary School, showing the highest number of male students failing or dropping out in 2019/2020 (34 students) and lowest in 2022/2023 (1 student). Female students had the highest failure or dropouts in 2019/2020 (16 students) and the lowest in 2019/2020 (1 student). Male promotions peaked in 2020/2021 (231 students) and hit a low in 2022/2023 (184 students), while female promotions peaked in 2021/2022 (155 students) and hit a low in 2018/19 (127 students). The greatest number of male repeaters was 4 students in 2018/2019, and no male repeaters were recorded in 2019/2020, 2020/2021 & 2021/2022. Female repeaters peaked at 1 student in 2018/2019 & 2022/2023 and hit a low of 0 student in remaining years. The highest number of male students passing and transferring occurred in 2021/2022 (69 students), and the lowest was in 2019/2020 (17 students). For females, the peak was in 2021/2022 (35 students), and the lowest was in 2018/2019 (11 students).



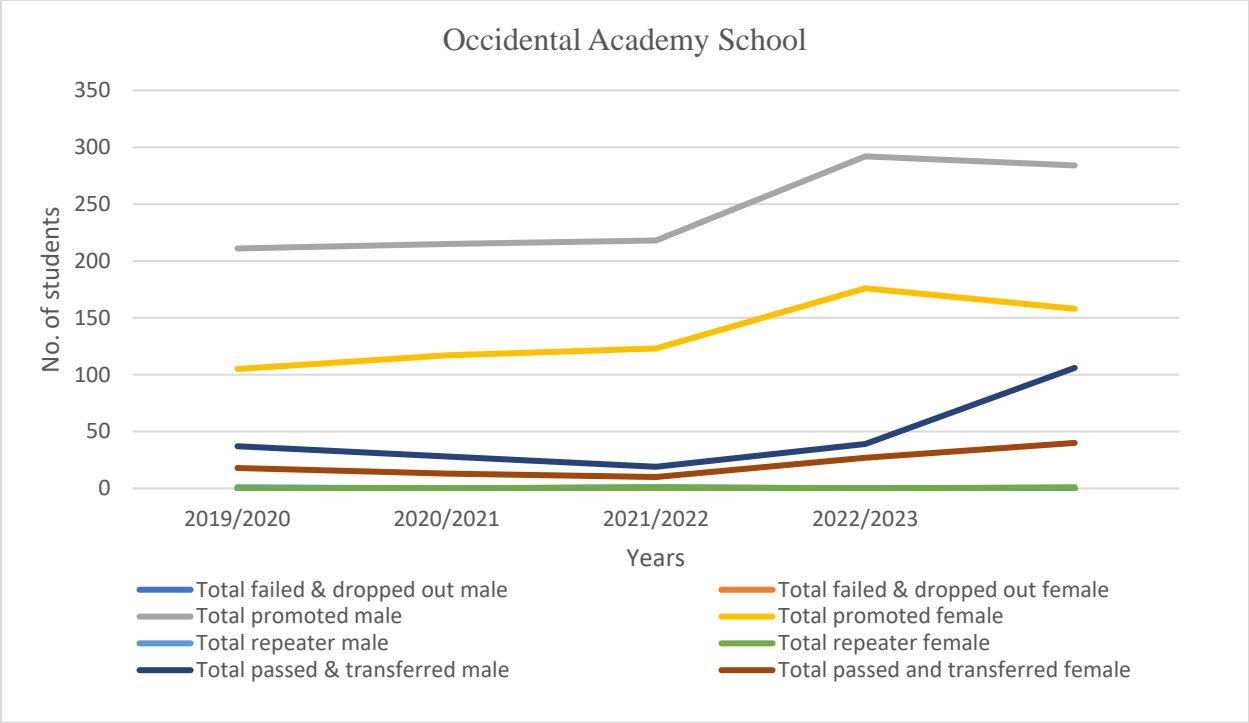
*Figure 26: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Janchetana Secondary School*

The graph reveals trends of failed and dropped out students at Janchetana Secondary School, showing the highest number of male students failing or dropping out in 2018/2019 & 2021/2022 (63 students) and lowest in 2019/2020 (20 students). Female students had the highest failure or dropouts in 2018/2019 (65 students) and the lowest in 2019/2020 (8 students). Male promotions peaked in 2020/2021 (495 students) and hit a low in 2022/2023 (241 students), while female promotions peaked in 2020/2021 (561 students) and hit a low in 2022/2023 (311 students). The greatest number of male repeaters was 125 students in 2022/2023, and no male repeaters were recorded in 2019/2020. Female repeaters peaked at 104 students in 2022/2023 and hit a low of 0 student in 2019/2020 & 2020/2021. The highest number of male students passing and transferring occurred in 2018/2019 (104 students), and the lowest was in 2019/2020 (35 students). For, females, the peak was in 2021/2022 (151 students), and the lowest was in 2019/2020 (29 students).



*Figure 27: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Advance Academy Secondary School*

The graph reveals trends of failed and dropped out students at Advance Academy Secondary School, showing the highest number of male students failing or dropping out in 2021/2022 (46 students) and lowest in 2019/2020 and 2020/2021 (zero student). Female students had the highest failure or dropouts in 2021/2022 (31 students) and the lowest in 2018/2019, 2020/2021 and 2022/2023 (zero student). Male promotions peaked in 2022/2023 (203 students) and hit a low in 2018/2019 (88 students), while female promotions peaked in 2022/2023 (133 students) and hit a low in 2018/2019 (62 students). The greatest number of male repeaters was 9 students in 2019/2020, and no male repeaters were recorded in 2020/2021. Female repeaters peaked at 9 students in 2019/2020 and hit a low in 2020/2021 (0 student). The highest number of male students passing and transferring occurred in 2021/2022 (40 students), and the lowest was in 2018/2019 (7 students). For, females, the peak was in 2021/2022 (41 students), and the lowest was in 2018/2019 (3 students). In 2019/2020 & 2020/2021, total passed and transferred student data were not updated.



*Figure 28: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Occidental Academy School*

The graph reveals trends of failed and dropped out students at Occidental Academy School, showing there were no recording of failed and dropped out male and female students in last five years. Male promotions peaked in 2021/2022 (292 students) and hit a low in 2018/2019 (211 students), while female promotions peaked in 2021/2022 (176 students) and hit a low in 2018/2019 (105 students). The greatest number of male repeaters was 1 student in 2018/2019 and 2020/2021, and no male repeaters were recorded for the remainder of the year. Female repeaters peaked at 1 student in 2020/2021 & 2022/2023 and there were none for the remainder of the year. The highest number of male students passing and transferring occurred in 2022/2023 (106 students), and the lowest was in 2020/2021 (19 students). For, females, the peak was in 2022/2023 (40 students), and the lowest was in 2020/2021 (10 students).

#### 4.1.5.1 Status of Drop out of students by gender perspective in Secondary Schools

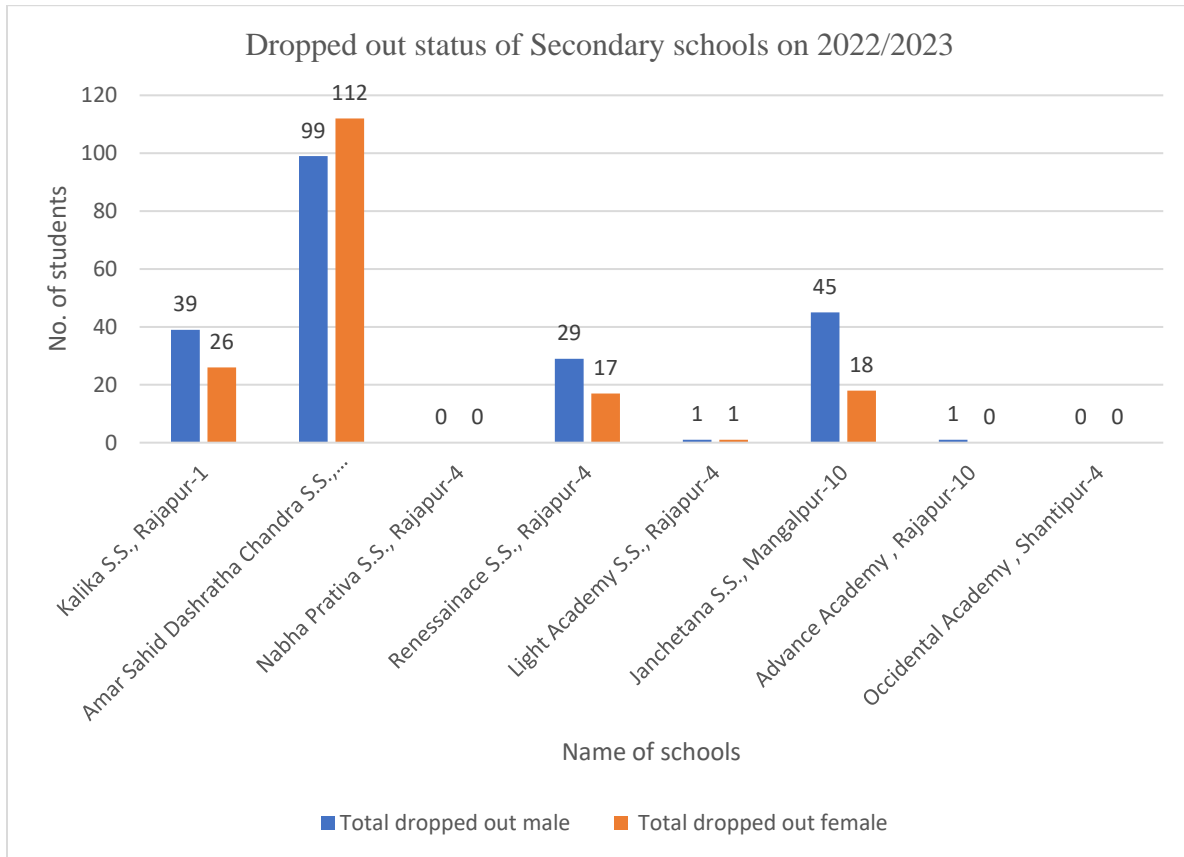
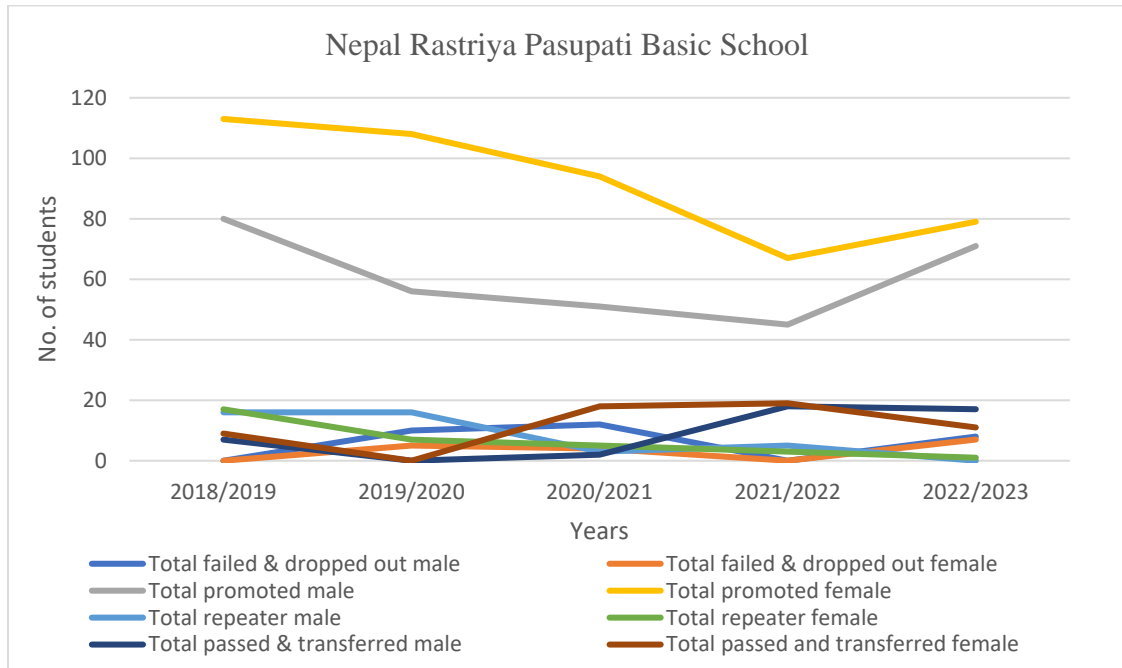


Figure 29: Status of drop out students of Secondary Schools on 2022/2023 BS

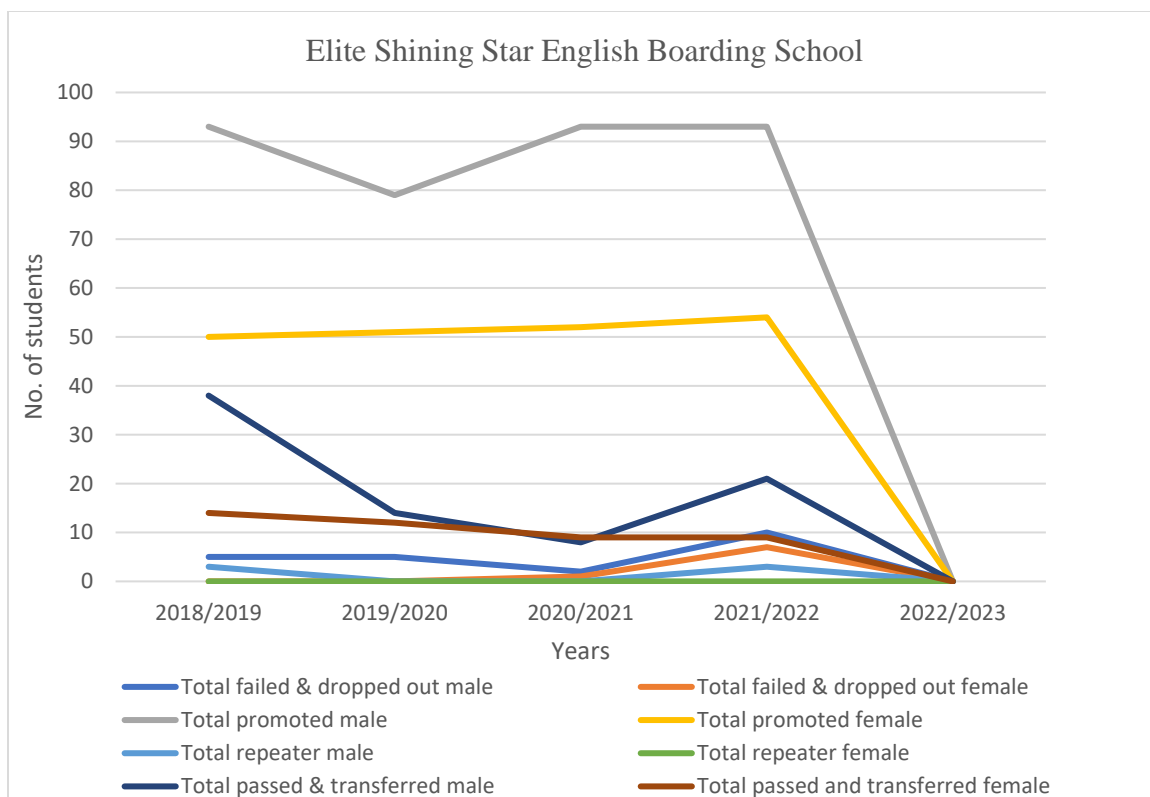
Among the 8 Secondary Schools, dropped-out status of Secondary School in 2022/2023 by gender perspective, the highest male dropped out was 99 of Amar Sahid S.S. out of 1,533 students, followed by the Janchetana S.S. (i.e. 45 out of 1,187), Kalika S.S. (i.e. 39 out of 864), Renaissance S.S. (i.e. 29 out of 719), Advance Academy & Light Academy has same rate of dropped out was 1 out of 525 & 468 respectively. The highest female dropped out was 112 out of 1,533 in Amar Sahid S.S., followed by the Kalika S.S. (i.e. 26 out of 864), Janchetana S.S. (i.e. 18 out of 1,187), Renaissance S.S. (i.e. 17 out of 719), Light Academy (i.e. 1 out of 468) & 0 female student in Advance Academy out of 525. Nabha Prativa S.S. & Occidental Academy School has not the dropped-out student at that year in both gender perspective.

**4.1.7 Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Basic Secondary Schools**



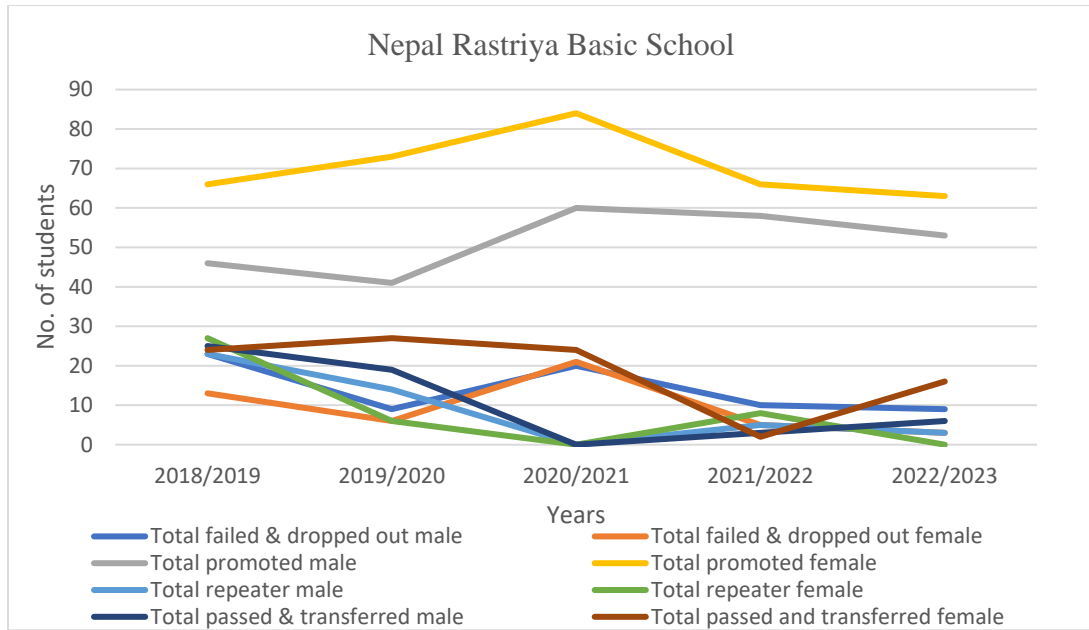
*Figure 30: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Nepal Rastriya Pasupati Basic Secondary School*

The graph reveals trends of failed and dropped out students at Nepal Rastriya Pasupati Basic School, showing the highest number of male students failing or dropping out in 2020/2021 (12 students) and lowest in 2018/2019 and 2021/2022 (zero student). Female students had the highest failure or dropouts in 2022/2023 (7 students) and the lowest in 2018/2019 and 2021/2022 (zero student). Male promotions peaked in 2018/2019 (80 students) and hit a low in 2021/2022 (45 students), while female promotions peaked at 113 in 2018/2019 (80 students) and hit a low in 2021/2022 (45 students). The greatest number of male repeaters was 16 students in 2018/2019 and 2019/2020, and no male repeaters were recorded in 2022/2023. Female repeaters peaked at 17 students in 2018/2019 and hit a low of 1 student in 2022/2023. The highest number of male students passing and transferring occurred in 2021/2022 (18 students), and the lowest was in 2019/2020 (0 student). For females, the peak was in 2021/2022 (19 students), and the lowest was in 2019/2020 (0 student).



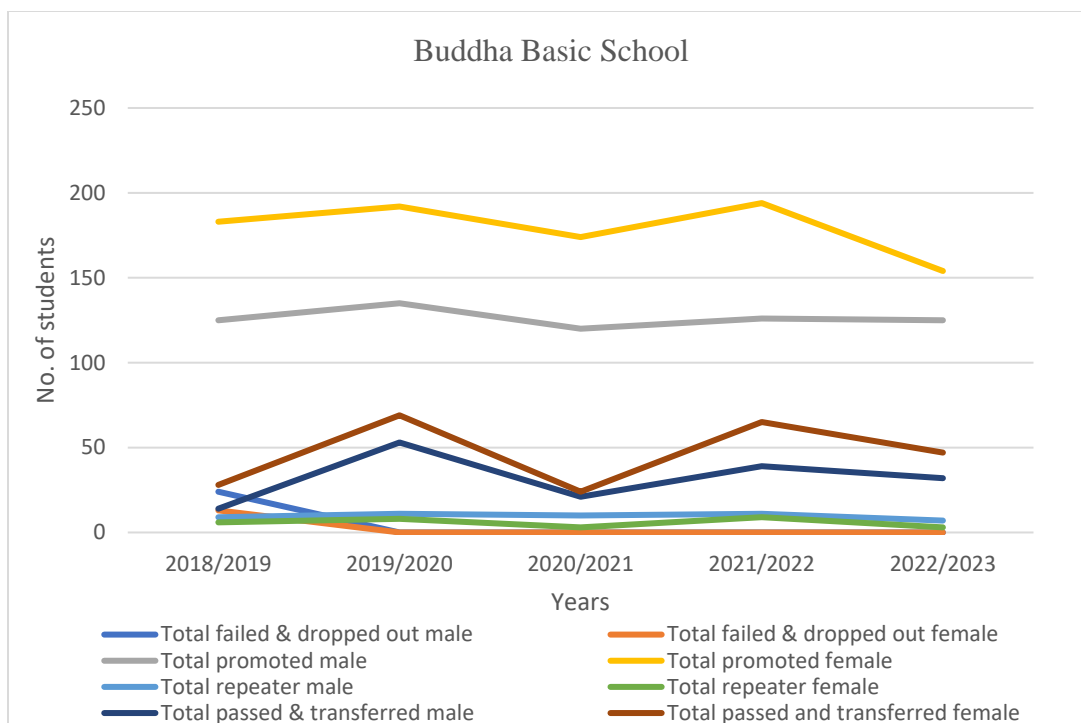
*Figure 31: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Elite Shining Star English Boarding School*

The graph reveals trends of failed and dropped out students at Elite Shining Star English Boarding School, showing the highest number of male students failing or dropping out in 2018/2019 & 2019/2020 (5 students) and lowest in 2020/2021 (2 students). Female students had the highest failure or dropouts in 2021/2022 (7 students) and the lowest in 2018/2029 and 2019/2020 (zero student). Male promotions peaked in 2018/2019, 2020/2021 & 2021/2022 (93 students) and hit a low in 2019/2020 (79 students), while female promotions peaked in 2021/2022 (54 students) and hit a low in 2018/2019 (50 students). The greatest number of male repeaters was 3 students in 2018/2019 and 2021/2022, and no male repeaters were recorded for the remainder of the year. During those years, there was not a single repeating female in this school. The highest number of male students passing and transferring occurred in 2018/2019 (38 students), and the lowest was in 2020/2021 (8 students). For, females, the peak was in 2018/2019 (14 students), and the lowest was in 2020/2021 & 2021/2022 (9 students). In 2022/2023, data were not updated.



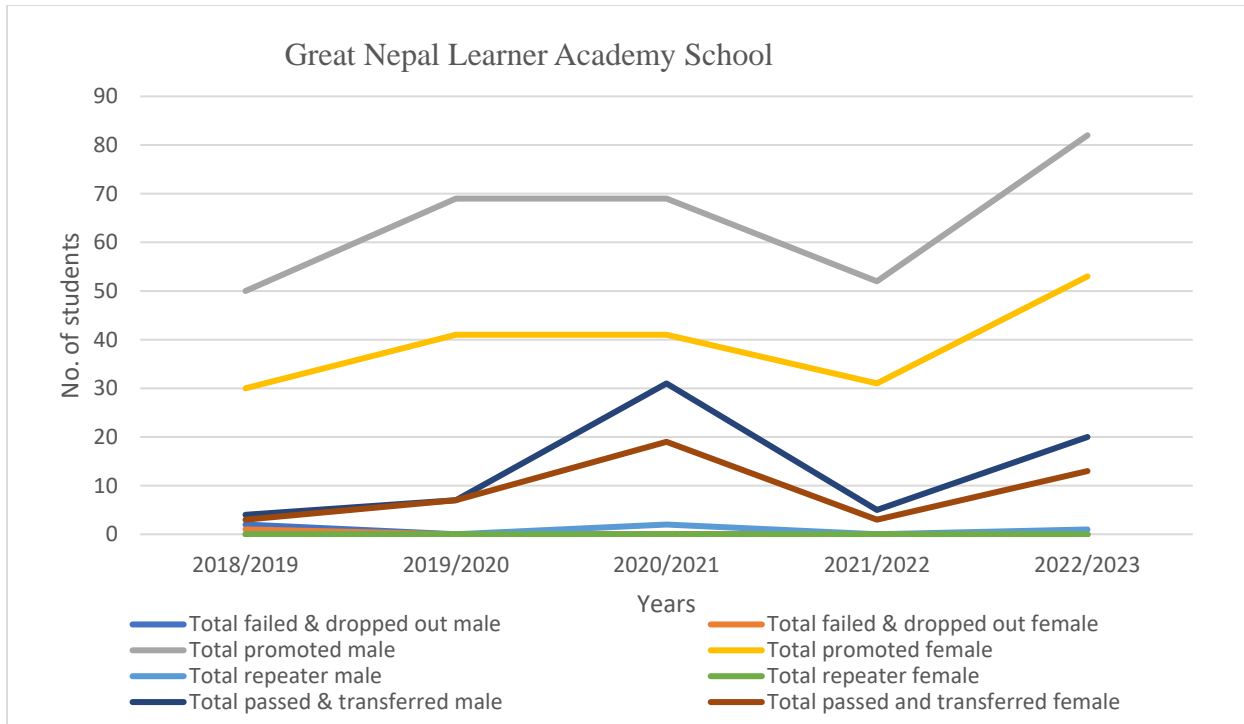
*Figure 32: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Nepal Rastriya Basic Secondary School*

The graph reveals trends of failed and dropped out students at Nepal Rastriya Basic School, showing the highest number of male students failing or dropping out in 2018/2019 (23 students) and lowest in 2019/2020 and 2022/2023 (9 students). Female students had the highest failure or dropouts in 2020/2021 (21 students) and the lowest in 2022/2023 (3 students). Male promotions peaked in 2020/2021 (60 students) and hit a low in 2019/2020 (41 students), while female promotions peaked in 2020/2021 (84 students) and hit a low in 2022/2023 (63 students). The greatest number of male repeaters was 23 students in 2018/2019, and no male repeaters were recorded in 2020/2021. Female repeaters peaked at 27 students in 2018/2019 and no female repeaters were recorded in 2020/2021. The highest number of male students passing and transferring occurred in 2018/2019 (25 students), and the lowest was in 2020/2021 (0 student). For females, the peak was in 2019/2020 (27 students), and the lowest was in 2021/2022 (2 students).



*Figure 33: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Buddha Basic Secondary School*

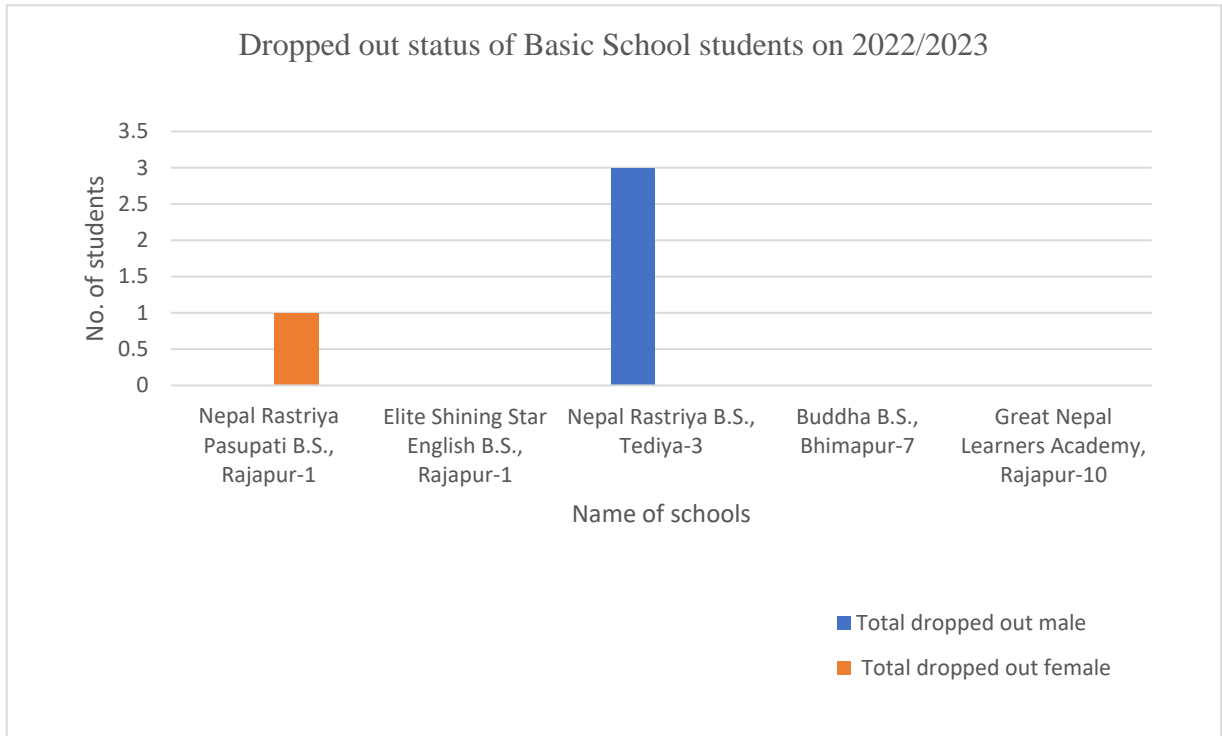
The graph reveals trends of failed and dropped out students at Buddha Basic School, showing the highest number of male students failing or dropping out in 2018/2019 (24 students) and lowest in the remainder of the year. Female students had the highest failure or dropouts in 2018/2019 (13 students) and the lowest in the remainder of the year. Male promotions peaked in 2019/2020 (135 students) and hit a low in 2020/2021 (120 students), while female promotions peaked in 2021/2022 (194 students) and hit a low in 2022/2023 (154 students). The greatest number of male repeaters was 11 students in 2019/2020 and 2021/2022, and hit low of 7 students in 2022/2023. Female repeaters peaked at 17 students in 2018/2019 and hit a low of 1 student in 2022/2023. The highest number of male students passing and transferring occurred in 2019/2020 (53 students), and the lowest was in 2018/2019 (14 students). For, females, the peak was in 2019/2020 (69 students), and the lowest was in 2020/2021 (24 students).



*Figure 34: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Great Nepal Learners Academy School*

The graph reveals trends of failed and dropped out students at Great Nepal Learners Academy School, showing the highest number of male students failing or dropping out in 2018/2019 (2 students) and lowest in the remainder of the year. Female students had the highest failure or dropouts in 2018/2019 (1 student) and the lowest in the remainder of the year. Male promotions peaked in 2022/2023 (82 students) and hit a low in 2018/2019 (50 students), while female promotions peaked in 2022/2023 (53 students) and hit a low in 2018/2019 (30 students). The greatest number of male repeaters was 2 students in 2020/2021, and hit low of 1 student in 2022/2023. During those years, there was not a single repeating female in this school. The highest number of male students passing and transferring occurred in 2020/2021 (31 students), and the lowest was in 2018/2019 (4 students). For, females, the peak was in 2020/2021 (19 students), and the lowest was in 2018/2019 & 2021/2022 (3 students).

**4.1.6.1 Status of Dropped out students by gender perspective in Basic Secondary Schools on 2022/2023**



*Figure 35: Status of drop out students of Basic School students on 2022/2023*

Among the 5 Basic Schools, dropped out status of basic schools in 2022/2023 the highest male students were in Nepal Rastriya Basic School i.e. 3 out of 160 and the other basic schools has no dropped out male students in that year. The highest female dropped out student was in Nepal Rastriya Pasupati Basic School i.e. 1 out of 160 and others school have no dropped out female students in that year.

#### 4.1.8 Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Primary Schools

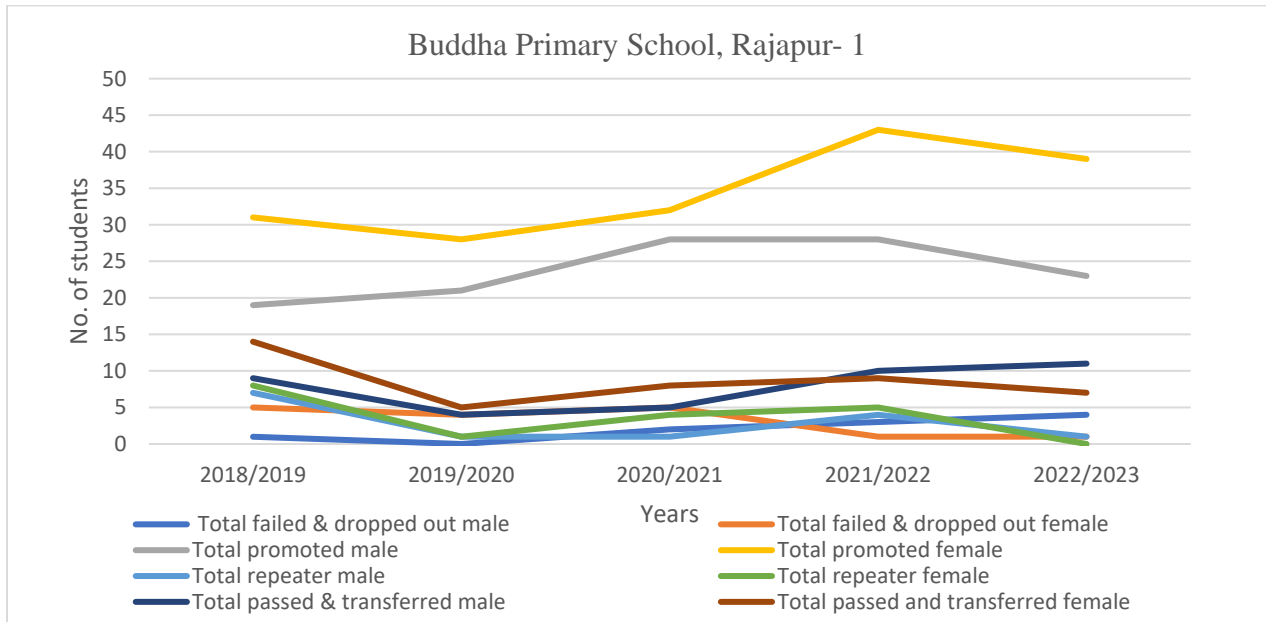
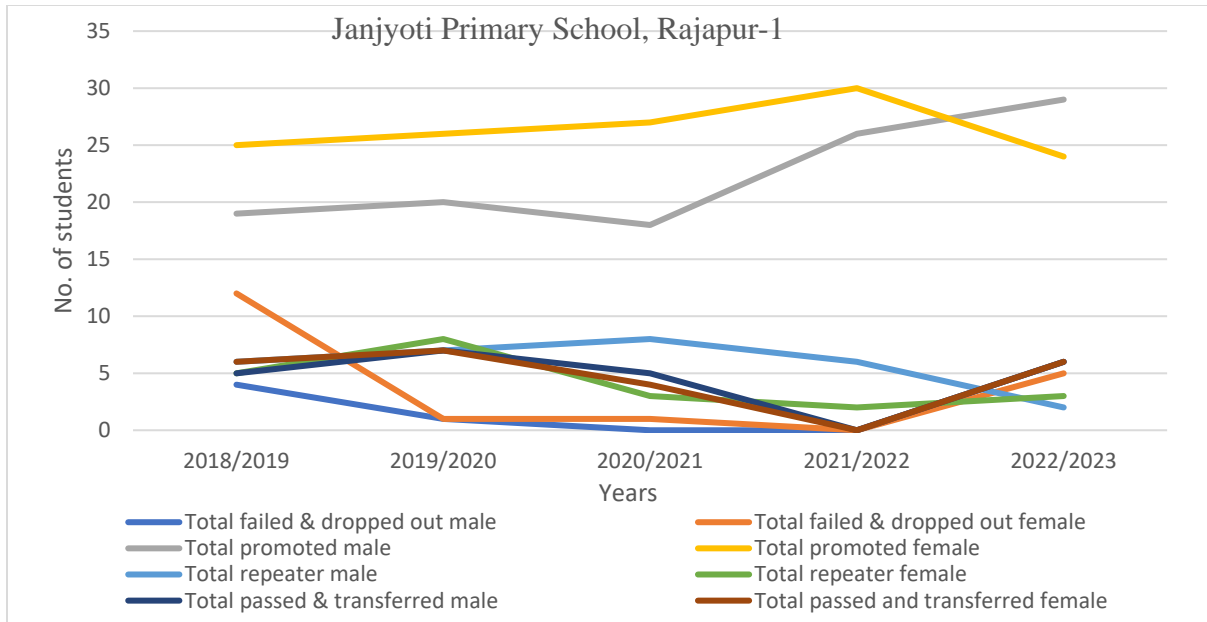


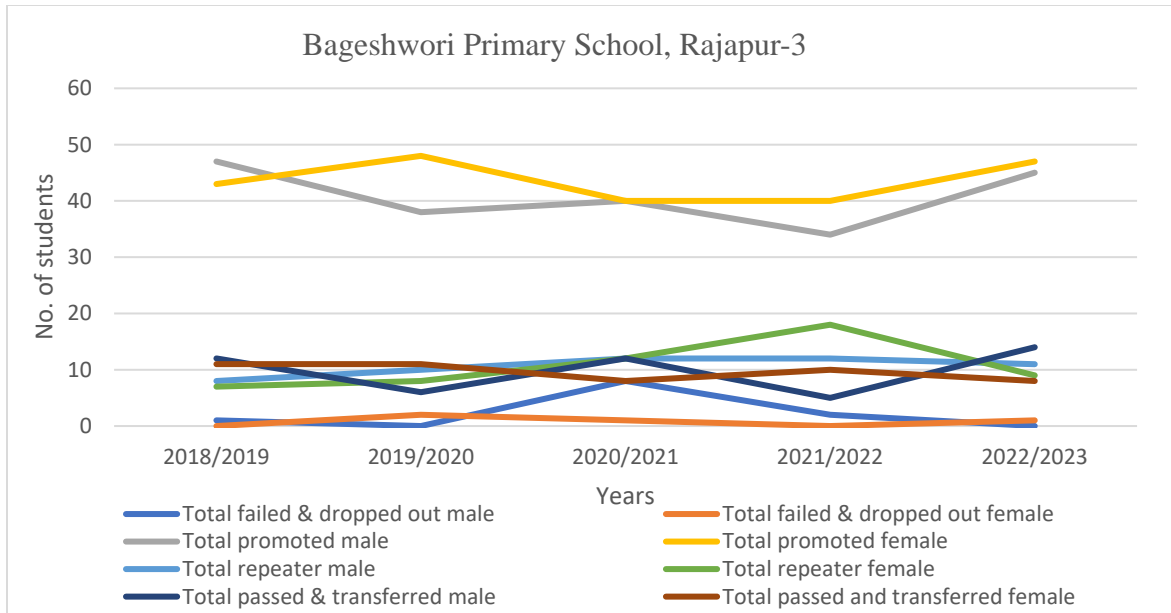
Figure 36: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Buddha Primary School

The graph reveals trends of failed and dropped out students at Buddha Primary School, showing the highest number of male students failing or dropping out in 2022/2023 (4 students) and lowest in 2019/2020 (0 student). Female students had the highest failure or dropouts in 2018/2019 & 2020/2021 (5 student) and the lowest in 2021/2022 & 2022/2023 (1 student). Male promotions peaked in 2020/2021 & 2021/2022 (28 students) and hit a low in 202018/2019 (19 students), while female promotions peaked in 2021/2022 (43 students) and hit a low in 2018/2019 (19 students). The greatest number of male repeaters was 7 students in 2018/2019, and hit a low of 1 student in 2019/2020, 2020/2021 & 2022/2023, while female repeaters peaked in 2018/2019 (8 students) and hit a low of 0 student in 2022/2023. The highest number of male students passing and transferring occurred in 2022/2023 (11 students), and the lowest was in 2019/2020 (5 students). For, females, the peak was in 2018/2019 (14 students), and the lowest was in 2019/2020 (5 students).



*Figure 37: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Janjyoti Primary School*

The graph reveals trends of failed and dropped out students at Janjyoti Primary School, showing the highest number of male students failing or dropping out in 2022/2023 (6 students) and lowest in 2020/2021 & 2021/2022 (0 student). Female students had the highest failure or dropouts in 2018/2019 (12 student) and the lowest in 2021/2022 (0 student). Male promotions peaked in 2022/2023 (29 students) and hit a low in 2020/2021 (18 students), while female promotions peaked in 2021/2022 (30 students) and hit a low in 2022/2023 (24 students). The greatest number of male repeaters was 8 students in 2020/2021, and hit a low of 2 students in 2022/2023, while female repeaters peaked in 2019/2020 (8 students) and hit a low of 2 students in 2021/2022. The highest number of male students passing and transferring occurred in 2019/2020 (7 students), and the lowest was in 2021/2022 (0 student). For, females, the peak was in 2019/2020 (7 students), and the lowest was in 2021/2022 (0 student).



*Figure 38: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Bageshowri Primary School*

The graph reveals trends of failed and dropped out students at Bageshwori Primary School, showing the highest number of male students failing or dropping out in 2020/2021 (8 students) and lowest in 2019/2020 & 2022/2023 (0 student). Female students had the highest failure or dropouts in 2019/2020 (2 students) and the lowest in 2018/2019 & 2021/2022 (0 student). Male promotions peaked in 2018/2019 (45 students) and hit a low in 2021/2022 (34 students), while female promotions peaked in 2019/2020 (48 students) and hit a low in 2020/2021 & 2021/2022 (40 students). The greatest number of male repeaters was 12 students in 2020/2021 & 2021/2022, and hit a low of 8 students in 2018/2019, while female repeaters peaked in 2021/2022 (18 students) and hit a low of 7 students in 2018/2019. The highest number of male students passing and transferring occurred in 2022/2023 (14 students), and the lowest was in 2021/2022 (5 students). For, females, the peak was in 2018/2019 & 2019/2020 (11 students), and the lowest was in 2020/2021 & 2022/2023 (8 students).

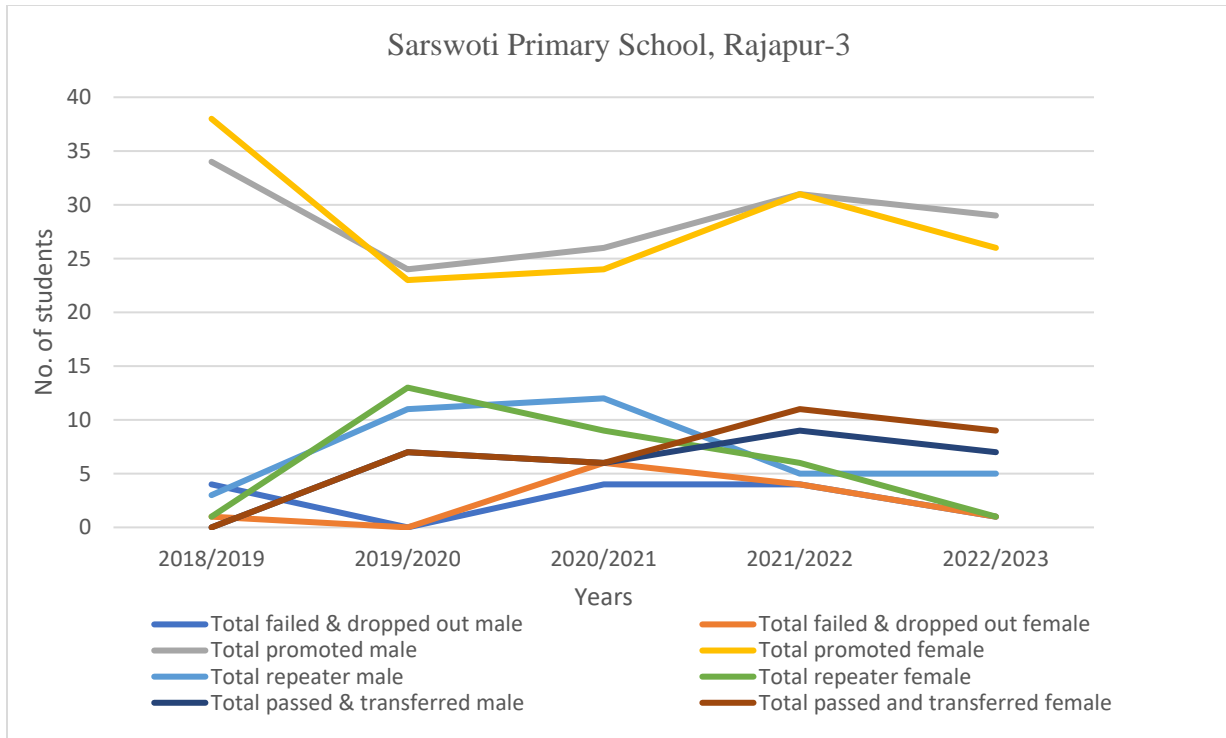
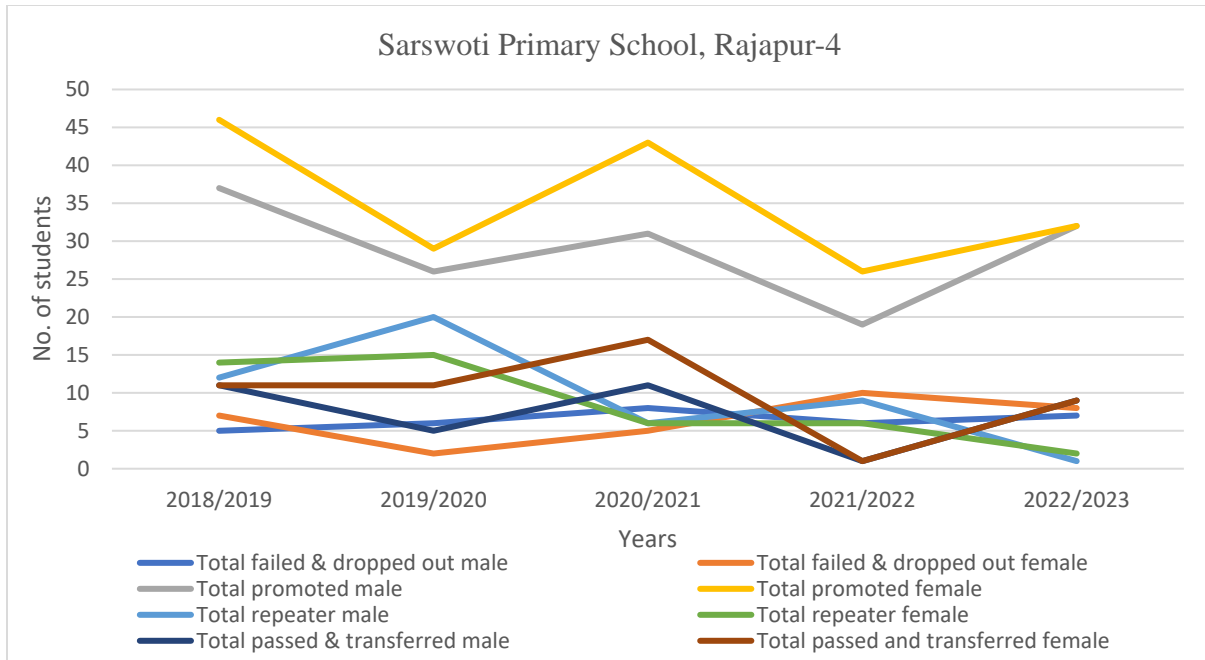


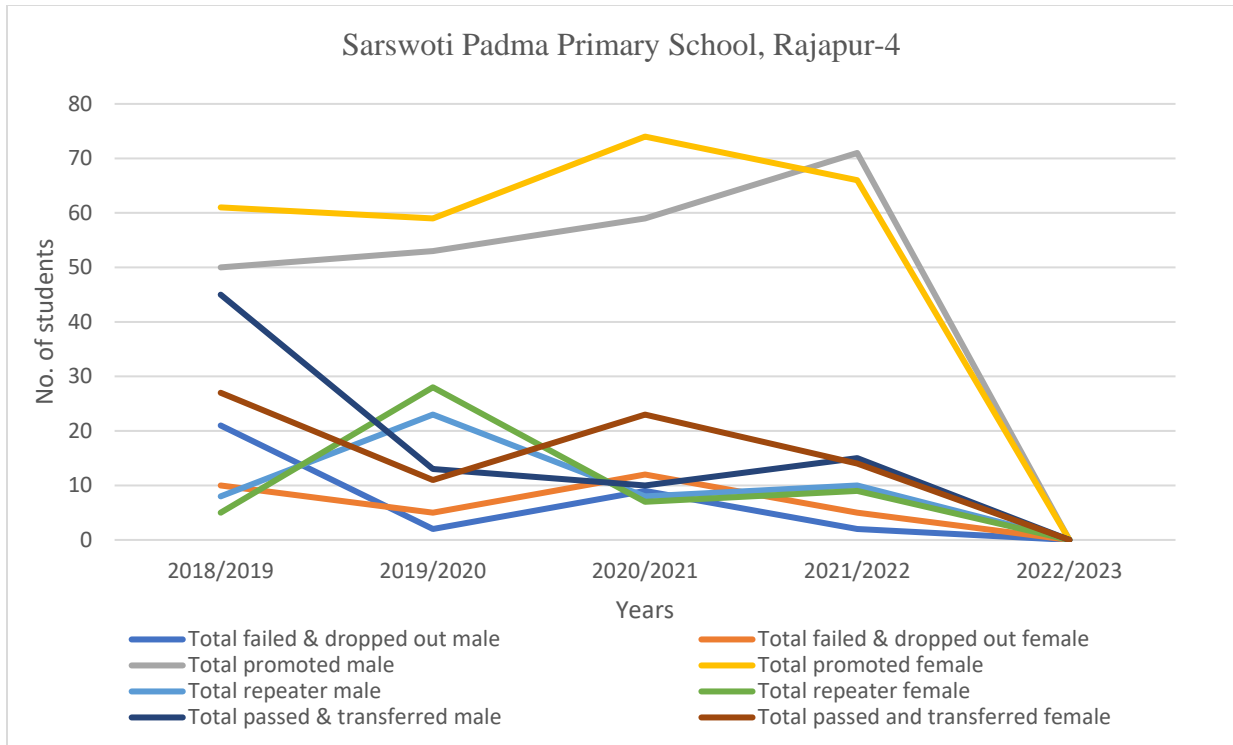
Figure 39: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Saraswoti Primary School

The graph reveals trends of failed and dropped out students at Saraswoti Primary School, showing the highest number of male students failing or dropping out in 2018/2019, 2020/2021 & 2021/2022 (4 students) and lowest in 2019/2020 (0 student). Female students had the highest failure or dropouts in 2020/2021 (6 students) and the lowest in 2019/2020 (0 student). Male promotions peaked in 2018/2019 (34 students) and hit a low in 2019/2020 (24 students), while female promotions peaked in 2018/2019 (38 students) and hit a low in 2019/2020 (23 students). The greatest number of male repeaters was 12 students in 2020/2021, and hit a low of 3 students in 2018/2019, while female repeaters peaked in 2019/2020 (13 students) and hit a low of 1 student in 2018/2019 & 2022/2023. The highest number of male students passing and transferring occurred in 2021/2022 (9 students), and the lowest was in 2018/2019 (0 student). For females, the peak was in 2021/2022 (11 students), and the lowest was in 2018/2019 (0 student).



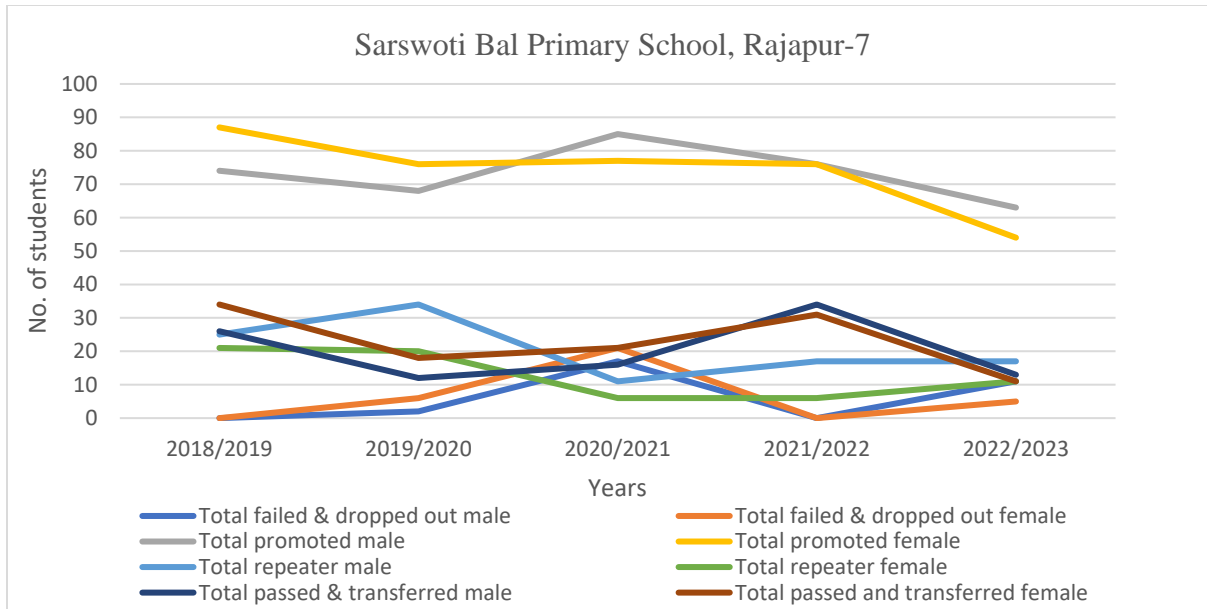
*Figure 40: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Saraswoti Primary School*

The graph reveals trends of failed and dropped out students at Saraswoti Primary School, showing the highest number of male students failing or dropping out in 2020/2021 (8 students) and lowest in 2018/2019 (5 students). Female students had the highest failure or dropouts in 2021/2022 (10 students) and the lowest in 2019/2020 (2 students). Male promotions peaked in 2018/2019 (37 students) and hit a low in 2021/2022 (19 students), while female promotions peaked in 2018/2019 (46 students) and hit a low in 2021/2022 (26 students). The greatest number of male repeaters was 20 students in 2019/2020, and hit a low of 1 student in 2022/2023, while female repeaters peaked in 2019/2020 (15 students) and hit a low of 2 students in 2022/2023. The highest number of male students passing and transferring occurred in 2018/2019 & 2020/2021 (11 students), and the lowest was in 2021/2022 (1 student). For, females, the peak was in 2020/2021 (17 students), and the lowest was in 2021/2022 (1 student).



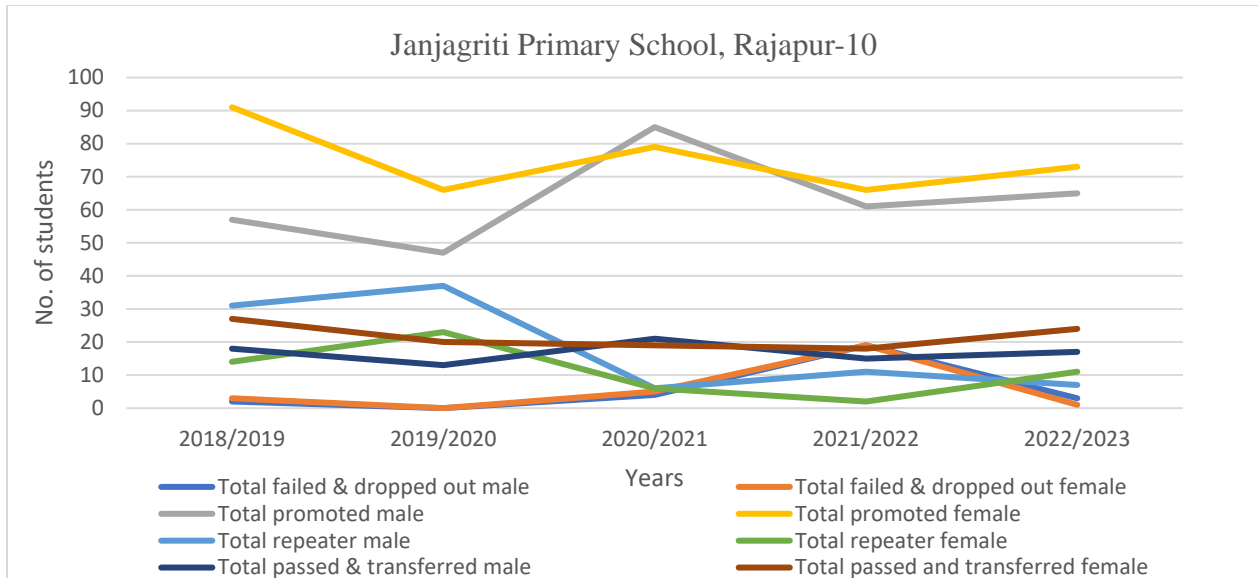
*Figure 41: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Saraswoti Padma Primary School*

The graph reveals trends of failed and dropped out students at Saraswoti Padma Primary School, showing the highest number of male students failing or dropping out in 2018/2019 (25 students) and lowest in 2019/2020 & 2021/2022 (2 students). Female students had the highest failure or dropouts in 2020/2021 (12 students) and the lowest in 2019/2020 & 2021/2022 (5 students). Male promotions peaked in 2021/2022 (71 students) and hit a low in 2018/2019 (50 students), while female promotions peaked in 2020/2021 (74 students) and hit a low in 2019/2020 (59 students). The greatest number of male repeaters was 23 students in 2019/2020, and hit a low of 8 students in 2018/2019 & 2020/2021, while female repeaters peaked in 2019/2020 (28 students) and hit a low of 5 students in 2018/2019. The highest number of male students passing and transferring occurred in 2018/2019 (45 students), and the lowest was in 2020/2021 (10 students). For, females, the peak was in 2018/2019 (27 students), and the lowest was in 2019/2020 (9 students). In 2022/2023, data were not updated.



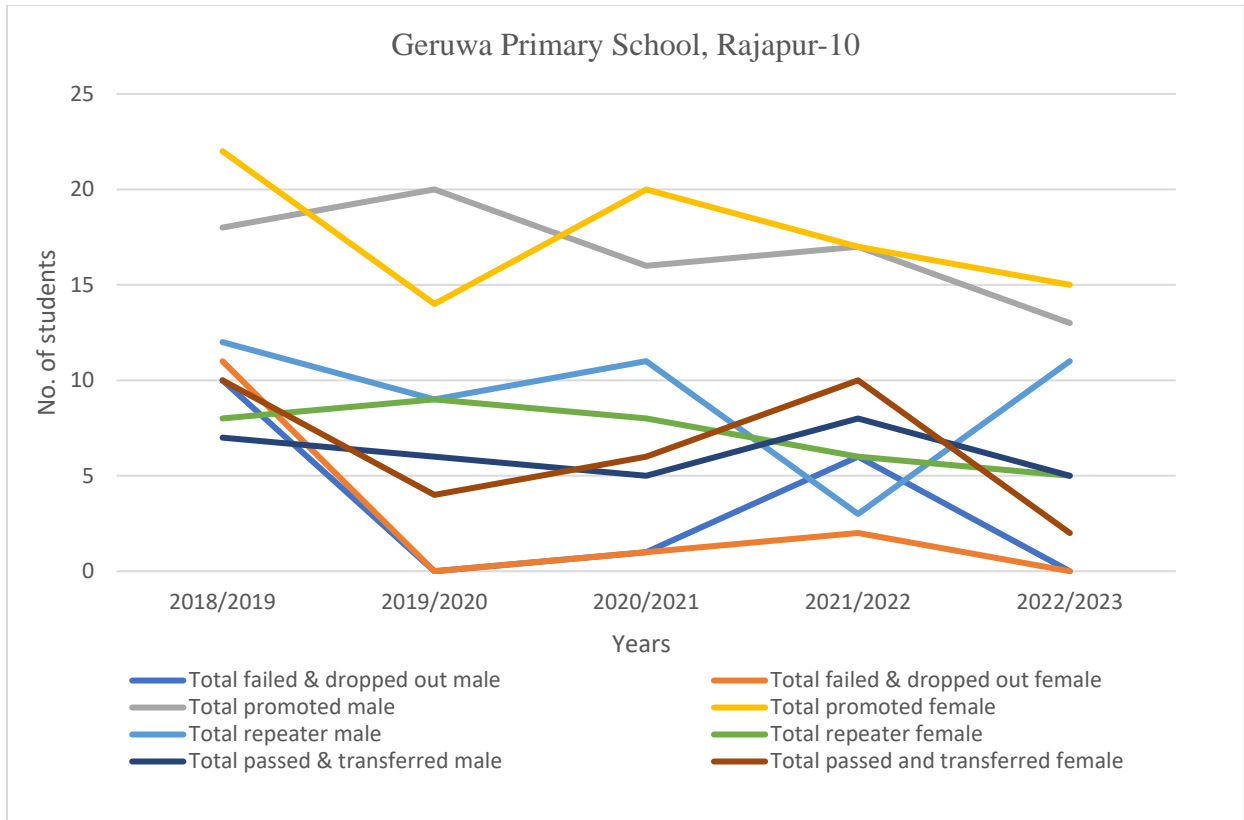
*Figure 42: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Saraswoti Bal Primary School*

The graph reveals trends of failed and dropped out students at Saraswoti Bal Primary School, showing the highest number of male students failing or dropping out in 2020/2021 (17 students) and lowest in 2018/2019 & 2021/2022 (0 student). Female students had the highest failure or dropouts in 2020/2021 (21 students) and the lowest in 2018/2019 & 2021/2022 (0 student). Male promotions peaked in 2020/2021 (85 students) and hit a low in 2022/2023 (63 students), while female promotions peaked in 2018/2019 (87 students) and hit a low in 2022/2023 (54 students). The greatest number of male repeaters was 34 students in 2019/2020, and hit a low of 11 students in 2020/2021, while female repeaters peaked in 2018/2019 (21 students) and hit a low of 6 students in 2020/2021 & 2021/2022. The highest number of male students passing and transferring occurred in 2021/2022 (34 students), and the lowest was in 2019/2020 (12 students). For, females, the peak was in 2018/2019 (34 students), and the lowest was in 2022/2023 (11 students).



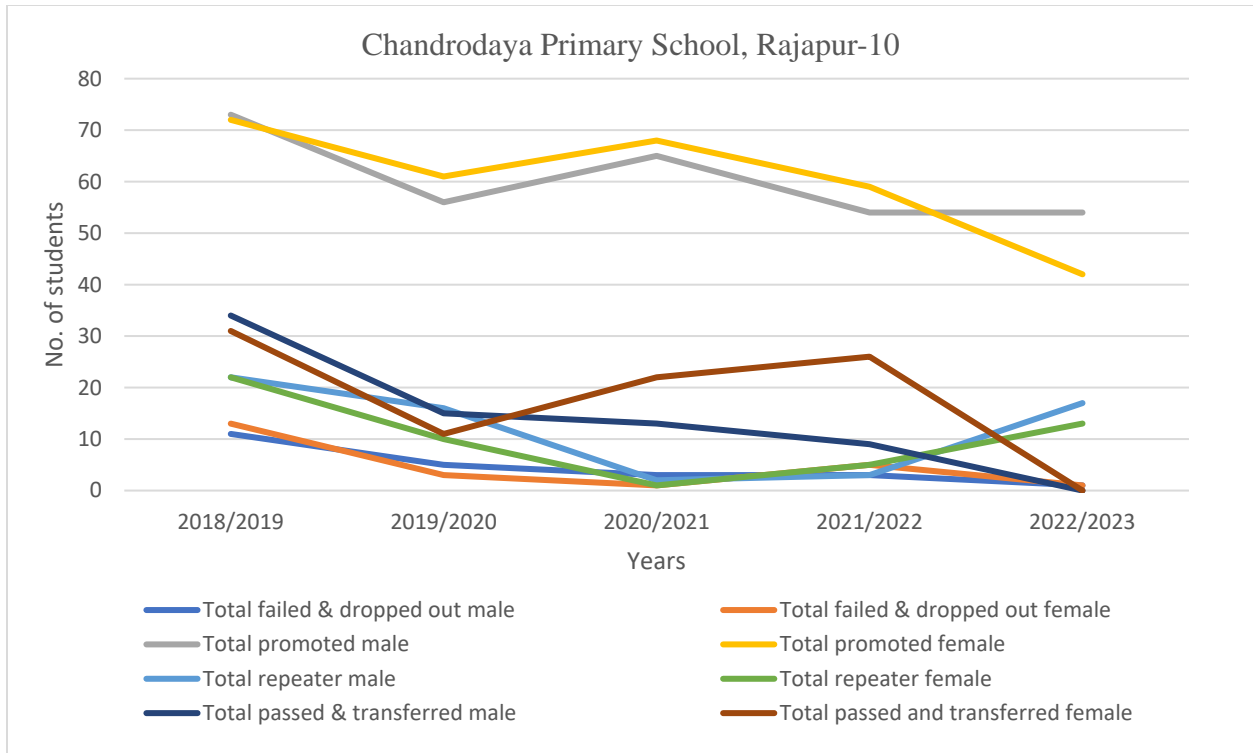
*Figure 43: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Janjagriti Primary School*

The graph reveals trends of failed and dropped out students at Janjagriti Primary School, showing the highest number of male students failing or dropping out in 2021/2022 (19 students) and lowest in 2019/2020 (0 student). Female students had the highest failure or dropouts in 2021/2022 (19 students) and the lowest in 2019/2020 (0 student). Male promotions peaked in 2020/2021 (85 students) and hit a low in 2019/2020 (47 students), while female promotions peaked in 2018/2019 (91 students) and hit a low in 2019/2020 & 2021/2022 (66 students). The greatest number of male repeaters was 37 students in 2019/2020, and hit a low of 6 students in 2020/2021, while female repeaters peaked in 2019/2020 (23 students) and hit a low of 2 students in 2021/2022. The highest number of male students passing and transferring occurred in 2020/2021 (21 students), and the lowest was in 2019/2020 (13 students). For, females, the peak was in 2018/2019 (27 students), and the lowest was in 2021/2022 (18 students).



*Figure 44: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Geruwa Primary School*

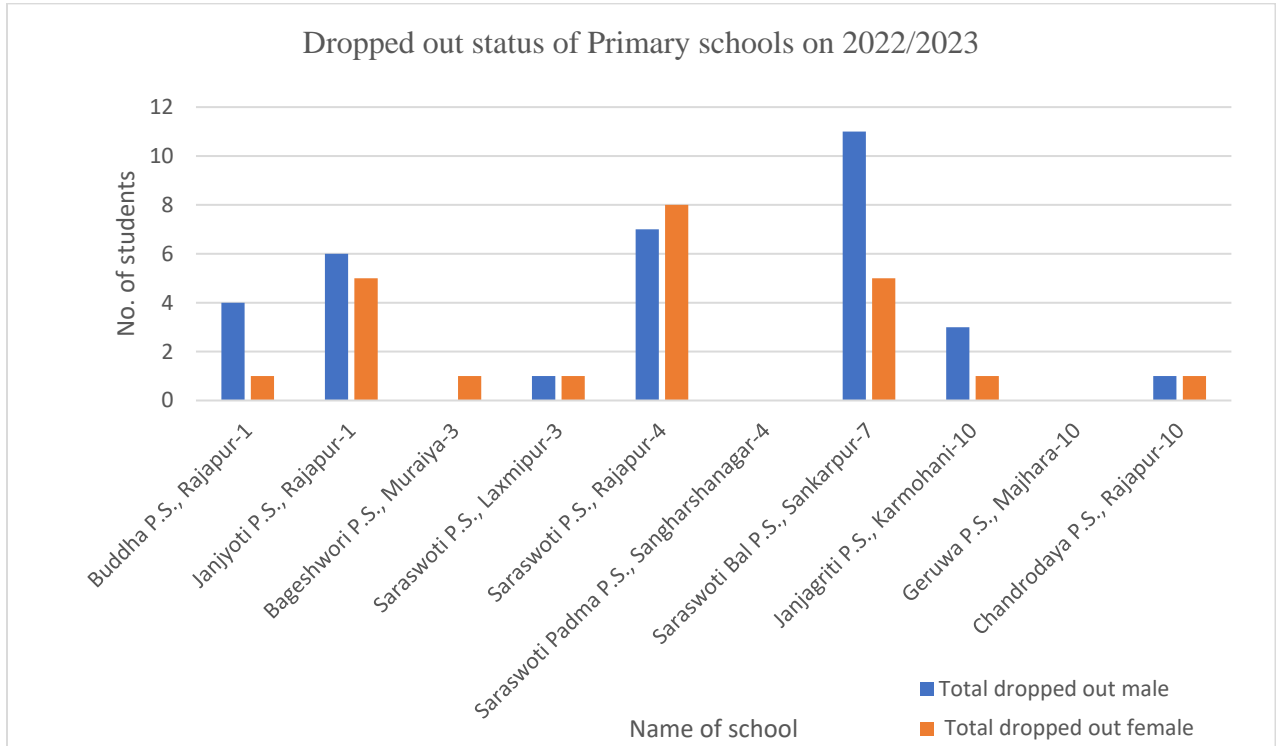
The graph reveals trends of failed and dropped out students at Geruwa Primary School, showing the highest number of male students failing or dropping out in 2018/2019 (10 students) and lowest in 2019/2020 & 2022/2023 (0 student). Female students had the highest failure or dropouts in 2018/2019 (11 students) and the lowest in 2019/2020 & 2022/2023 (0 student). Male promotions peaked in 2019/2020 (20 students) and hit a low in 2022/2023 (13 students), while female promotions peaked in 2018/2019 (22 students) and hit a low in 2019/2020 (14 students). The greatest number of male repeaters was 12 students in 2018/2019, and hit a low of 3 students in 2021/2022, while female repeaters peaked in 2019/2020 (9 students) and hit a low of 5 students in 2022/2023. The highest number of male students passing and transferring occurred in 2021/2022 (8 students), and the lowest was in 2020/2021 & 2022/2023 (5 students). For, females, the peak was in 2018/2019 & 2021/2022 (10 students), and the lowest was in 2022/2023 (2 students).



*Figure 45: Trend of Failed & dropped out, Repeaters, Passed & transferred and Promoted students by gender perspective in Five years in Chandrodaya Primary School*

The graph reveals trends of failed and dropped out students at Chandrodaya Primary School, showing the highest number of male students failing or dropping out in 2018/2019 (11 students) and lowest in 2022/2023 (1 student). Female students had the highest failure or dropouts in 2018/2019 (13 students) and the lowest in 2020/2021 & 2022/2023 (1 student). Male promotions peaked in 2018/2019 (73 students) and hit a low in 2021/2022 & 2022/2023 (54 students), while female promotions peaked in 2018/2019 (72 students) and hit a low in 2022/2023 (42 students). The greatest number of male repeaters was 22 students in 2018/2019, and hit a low of 2 students in 2020/2021, while female repeaters peaked in 2018/2019 (22 students) and hit a low of 1 student in 2020/2021. The highest number of male students passing and transferring occurred in 2018/2019 (34 students), and the lowest was in 2022/2023 (0 student). For, females, the peak was in 2018/2019 (31 students), and the lowest was in 2022/2023 (0 student).

**4.1.7.1 Status of Dropped out students by gender perspective in Primary Schools on 2022/2023**



*Figure 46: Status of drop out students of Primary Schools on 2022/2023*

Among the 10 primary schools, the dropped-out status of primary students by gender perspective in 2022/2023, the highest number of male students was 11 of Saraswoti Bal primary school, followed by Saraswoti primary school (i.e. 7 out of 198), Janjyoti primary school (i.e. 6 out of 89), Buddha primary school (i.e. 4 out of 102), Janjagriti primary school (i.e. 3 out of 221), Saraswoti primary school, Laxmipur-3 & Chandrodaya primary school has the same number i.e. 1 out of 77 & 191 respectively. Bageshwori primary school & Geruwa primary school has no dropped out number of male students at that year. In terms of female dropped-out number, Saraswoti primary school, Rajapur-4 has the highest value of 8 out of 114, followed by Janjyoti primary school & Saraswoti Bal primary school with 5 female students out of 89 & 198 respectively, Buddha P.S., Bageshwori P.S., Saraswoti P.S. Laxmipur-3, Janjagriti P.S., Chandrodaya P.S. have the same value i.e. 1 out of 102, 143, 77, 221 & 191 respectively. Geruwa P.S. has no female dropped out students at that year. Saraswoti Padma primary school has not updated their data at that year.

#### **4.1.9 Coping mechanism**

Schools of Rajapur municipality seems to be following some coping mechanisms to deal with the impact of flood on education of students. They began adapting to the situation differently in order to ensure education quality of students after flood.

From KII, we came to know that 8 schools were providing stationary products like bag, copy, pencil, book etc. to actual flood affected students, 8 schools did not get any kind of donation for the students, 3 schools get donation from different I/NGO's, 2 schools were able to manage themselves with the help of guardians, 2 schools get help from the ward office.

In order to overcome the loss of education of students by flood, about 10 schools were providing extra classes for the weak students where 13 schools were not providing any extra classes in order to maintain the academic performance of students, which leads students having difficulties with English and Math subjects.

Subject teachers from 23 schools expressed various considerations: 46 teachers aimed to enhance communication with parents and students, 20 teachers sought to create employment opportunities for improved livelihoods, 25 teachers focused on refining study materials and practices to boost student interest and performance, 18 teachers aimed to raise awareness about the societal value of education to reduce dropout rates, and 15 teachers explored scholarship provision to support financially needy students and minimize dropouts.

Key informant interviews revealed that 1 school had insurance policies for students, aiding flood-affected students with stationary products. Additionally, 22 schools lacked insurance for both teachers and students. To boost student enrollments, schools need safety measures. Regarding disaster preparedness, out of 124 subject teachers, 70 teachers prioritized awareness, 35 teachers considered incorporating drills into the curriculum, and 19 teachers contemplated collaboration with other organizations to mitigate flood impacts on children's education.

Through FGD with parents, it was revealed that when flood inundate human settlements, study materials such as books, notebooks, uniform and shoes are washed away and damaged, posing challenges for students. The flood experience slightly disturbs the emotional well-being of the children's, impacting their concentration on studies. Some children are affected emotionally but show resilience and during school closures, some utilize their time for studying.

## 4.2 Discussion

### 4.2.1 Impact of flood on education

The results of this study provide valuable insights into the impact of floods on education, specially focusing on condition of school buildings, dropped-out rates, promoters by gender perspective, in the Rajapur municipality. According to LDCRP 2022 of Rajapur, ward no. 10, 9, 7 are very highly flooded area and 1,3,4 are highly flooded area.

As per the flash report-I (2011-2015), for primary level there should be School Student Teacher Ratio (SSTR) 32:1, basic level should be 36:1 and for secondary level ratio should be 48:1(Centre for Education and Human Resource Development, Ministry of Education, 2019). This study found that 2 schools (Chandrodaya P.S., Amar Sahid Dasratha Chandra S.S.) meets the standards of SSTR, where 10 schools (Kalika S.S., Janjyoti P.S., Bageshwori P.S., Saraswoti Padma P.S., Renessainace S.S., Light Academy, Saraswoti Bal P.S., Janjagriti P.S., Janchetana S.S., Buddha B.S.) were near the standard which can be considerable to meet the standard and remaining 11 schools (Buddha P.S., Nepal Rastriya Pasupati B.S., Elite Shining Star English Boarding School, Advance Academy, Great Nepal Learners Academy, Nepal Rastriya B.S., Saraswoti P.S.-3, Saraswoti P.S.-4, Nabha Prativa S.S., Occidental Academy, Geruwa P.S.) were very far from standard of SSTR. In those 11 schools there seems to urgent need to hire more teacher according to the needs, to enhance the quality of education and also meet the standard of School Student Teacher Ratio. According to the Government of Nepal, Student Toilet Ratio (STR) should be 50:1(Niroula, 2021) and this study found that 14 schools ( Buddha P.S., Janjyoti P.S., Elite Shining Star English Boarding School, Nepal Rastriya B.S., Bageshwori P.S., Saraswoti P.S.-3, Saraswoti P.S.-4, Janjagriti P.S., Saraswoti Bal P.S., Geruwa P.S., Chandrodaya P.S., Advance Academy, Nepal Rastriya Pasupati B.S.)) meets the standard of STR, 8 schools (Kalika S.S., Saraswoti Padma P.S., Nabha Prativa S.S., Occidental Academy, Renessainace S.S., Light Academy, Buddha B.S., Janchetana S.S) ratio were range between 51-100 and 2 schools (Amar Sahid Dasratha Chandra S.S., Great Nepal Learners Academy) ratio were range between 101-150. When students basic needs are met, they tend to be more engaged in class activities. Placing toilets inside the school building, rather than on the playground, can reduce the impact of floods during flood seasons, ultimately minimizing school closure times during such events.

The BCI construction Inc., in November 26, 2021 report states that lifespan of a building based on building materials ranges anywhere from 30-50 years to hundred years in structures like cathedrals, churches and government buildings. So those buildings which have reached 50 and about to reach 50 years should be maintain time to time. Among the 23 schools of our study area, 3 schools (Nepal Rastriya Pasupati B.S., Amar Sahid Dasratha Chandra S.S., Janchetana S.S.) building were found to be above 50 years and 11 schools (Kalika S.S., Buddha P.S., Nepal Rastriya B.S., Bageshwori P.S., Saraswoti P.S.-4, Buddha B.S., Janjagriti P.S., Geruwa P.S., Chandrodaya P.S.) were in between 26-50 years .So these school buildings should be renovated as soon as possible for the better and safe learning environment for the students. The extended exposure of school buildings to floods gradually compromises their stability. Consequently, even minor rainfall results in the classroom wall becoming damp, leading to the formation of mold. Prolonged exposure to these conditions contributes to poor air quality, posing a significant risk of health issues, particularly respiratory and skin allergies in students.

It is observed that after the flood, the repeaters and promoted rate has increased significantly in each wards, in ward 1, there are 6.45% & 4.8% repeaters rate, 62.03% & 70.33% were promoted rates, in ward 3, 12.35% & 11.16% were repeaters rate, 55.85% & 65.62% were promoted rate, in ward 4, 4.33% & 4.98% were repeaters rate, 57.12% & 60.58% were promoted rates, in ward 7, 9.98% & 5.26% were repeaters rates, 65.46% & 71.70% were promoted rates and in ward 10, 8.05% & 6.32% were repeaters rates, 61.59% & 64.93% were promoted rates of male and female students respectively in last five years i.e. 2018/2019-2022/2023. The primary reason for the student absences prior to the flood after the festival season and the engagement of children labor work based on the daily wages to earn some money for their families, which directly contributed to their poor performance in academic sector. In a similar vein, an Indian study discovered that inadequate academic performance is not always the result of school resources alone; other contributing factors include the home environment, family finances, the availability of tuition and other financial support, counseling and guidance, the frequency of conflicts and disagreements, household chores, and other factors(Kapur, 2018). Hence, in Rajapur municipality also, the seasonal and unseasonal flood has caused significant impact in the economic condition of the people living there, which causes financial crises among the people which force them to engage their children in daily labor work to support their family, which is encouraging children to earn money rather than focusing on their education. One of the reasons for declination of an academic

performance of students in last five years may be because of COVID-19 which was first reported in 2019 i.e. 2076 B.S. During the pandemic all of the schools and universities were closed for the safety reasons.

The trend of flood events in Rajapur, Bardiya, period from 1992 to 2021, sixteen major flood events were observed and the trend is increasing. However, minor flooding and inundation occur almost every year. The deadliest flood occurred in 2014 with a discharge rate of 17,900 m<sup>3</sup> /s. Post-monsoon season floods occurred in 2009 and 2021(Chhinal, 2023), causing loss and damage in a variety of sectors including education.

Regarding agricultural losses and damages, the period of flooding spanning from October 18, 2021 to October 20, 2021, resulted in the most significant impact. According to the findings, approximately 1.4529 hectares of land were eroded by the flood, incurring a cost of \$35,741.34. Additionally, about 20.4408 hectares were damaged, requiring \$2,720.66 for restoration to agriculture use. The overall cost of the loss and damage to agricultural land amounted to \$38,462(Paudel, 2022). This study reveals that wards 10 and 4 exhibit a notable rise in the dropout rates for both male and female students during the 2021/2022 academic year. This increase aligns with the year marked by severe flooding, which plays a significant role in the elevated dropout rates observed during that period due to unseasonal flood which cause economic crisis and eventually leads to higher dropout rate especially in the mentioned wards 1,3,4,7 and 10. However, despite the improvement, the dropout rate for male remains higher than that for females. A significant factor contributing to the dropout rate in this area is the aftermath of floods, where male students prioritize earning daily wages initially to support their family's financial situation. Over time, students who dropout become attracted to the immediate financial gains and ultimately leave school permanently. For female students, the dropout rate is primarily influenced by household responsibilities, family obligations, early marriages and financial difficulties following the flood.

This study indicates that among wards 1, 3, 4, 7 and 10, ward 3 is noteworthy for experiencing a decline in the rate of students progressing to the next grade, reflecting a decrease in academic performance for both male and female students. Despite efforts to provide additional classes for weaker students, the academic performance rate for females remains higher than that for males. A significant factor contributing to the decline in academic performance in this area is the aftermath of floods, compounded by the high student population concentrated in only three schools.

Following the flood, many students were directly impacted, leading to a period of absence from school and mild mental disturbance. When they eventually returned to school, they found it challenging to engage with the curriculum, losing interest in their studies, which resulted in a decline in academic performance. According to Nepal factsheet, Dropout rates are low in Nepal for primary and lower secondary school but in grade 10 of upper secondary level, drop out is extremely high at 32% (Theodoridis and Kraemer).

The "economic effects of student dropouts" study conducted in Pakistan is predicated on a comparative examination of the causes of student dropouts in various nations. They talked about how students from low-income families are more likely to drop out of school, and that additional factors that may contribute to this include the building, the quality of education, the conditions in the school, and the distance to schools. Additionally, it was stating that economic growth depends on education (Choudhary AI, 2015). The class imbalance problem was addressed using the Synthetic Minority Oversampling Technique (SMOTE) in the research on the dropout early warning system carried out in South Korea. The trained classifiers were assessed using both Precision-Recall (PR) and Receiver Operating Characteristics (ROC) curves. ROC and PR curve analysis revealed that the boosted decision tree performed at its best (Lee and Chung, 2019).

The influence of severe flooding on student accomplishment was discovered through research on "evidence from severe floods in Thailand" utilizing a difference-in-difference technique on the national examination known as O-net. According to this study, the flood significantly and negatively impacted every grade 6 test result, with the exception of social studies. The flood had no noticeable effect on test scores for grade 12 but had a negative and significant influence on all test scores for grade 9. It was also discovered that decreased academic achievement and salary can result from a decline in test results (Thamtanajit, 2020).

From KII, we came to know that, out of 23 schools, about 82.61% students were absent during the rainy season/at the time of flood it is mainly because most of the students came school by bicycle. During the rainy season due to lack of proper drainage system rain water is stored and cause problem to reach the destination. About 39.13% students were slightly mentally disturb because of the scenario created by the flood in the family and the neighborhood. About 8.69% teachers were absent during the flood because they were affected by the flood. In order to improve an

academic performance of students, 10 schools were providing extra classes for weak students whereas 13 schools were not providing the extra classes for weak students.

According to LDCRP 2022 of Rajapur Municipality, it is found that 88.3% household were using handpump/tube-well whereas 10.9% household were using tap water & remaining households were using other kind of water resources. 3% of household were using arsenic contain water which is more than Nepal standards of drinking water. And 73% of household's water quality were not research still. In the Rajapur municipality, out of 23 schools, 17 schools were found to be using tap water for drinking purpose, 3 schools were using tube-well water and 3 schools choose to provide their kids with clean, filtered water.

As per KII, out of 23 schools, about 52.17% students were dropped out from the school due to poor economic status of parents, 21.74% were lack in parent guidance, 13.04% were due to location of school & remaining 13.04% were due to lose interest in course and government policy offer i.e. chance of selection in government job/scholarship in future who were passed from the government school. Due to such policy number of students were decreased in some private schools and transferred to government school. The reason behind the uneven distribution of student numbers in the schools may be because of unavailability of facilities in school, status of infrastructure, reputation of school, location of the school in that area etc.

#### **4.2.2 Adaptive strategy to improve education quality and mitigation measures**

The result of my study highlights the diverse type of strategy to improve education quality. In Rajapur municipality both students and teacher were found to be affected by the flood. In Rajapur municipality out of 23 schools, 10 schools were found to be providing extra classes for the students to overcome the impact on academic performance of students due to flood. In Hull city, United Kingdom Educators preserved, showcasing resilience and dedication to their roles, ensuring that the school continued to function effectively. The commitment and determination displayed by both educators and administrative staff highlight their unwavering dedication to the welfare and continuity of education for the students, despite the obstacles faced (Convery, Carroll and Balogh, 2015).

Kalika Secondary School of ward no. 1 has got the funding from the Community Development Project (CDP) in order to provide high-quality education, enhance school infrastructure, support cooperatives' revenue-generating efforts, provide quality access to health care, protect children's

rights, and advocate against child marriage. In the field of education, the following initiatives were carried out in 2021:

- Encouraging Children's Fair Access to and Involvement in Education (Parental Education, Assistance with Higher Education, Radio Kaksha, Radio Phoning, Establishment of Girls Clubs, Provision of Materials for Girls Clubs, and Many Other Things)
- Enhancing the learning outcome (child-friendly classroom management support, classroom observation, and teacher clinic) and the school's internal efficiency

This organization mostly provides 85 wooden chairs, 3 shoe racks, a temporary hand wash station, classroom observation and teacher clinic, and an assessment of the MHM project's overall outcomes and accomplishments to Kalika SS. Operation of the complaint box (knowledge of child protection and rights)(Words, 2001)



Figure 47: Wall paintings related with the flood

To address the issue of flooding, particularly in Rajapur, the construction of a flood resistant building with two classrooms has commenced at Rastriya Basic School in ward no. 3. The initiative is part of the President Educational Reform Program and is nearly finished. As per the KII, a progress report has been submitted to the municipal head for approval to proceed with additional construction work on the school building.



*Figure 48: Ongoing construction of flood resilience school building*

Three of the 44 sources of resilience—evacuation and safety awareness (H<sub>01</sub>), education commitment during flooding (H<sub>03</sub>), and education provision (P<sub>04</sub>)—are connected to the education sector, according to Mr. Ramesh Gautam sir of Practical Action, Rajapur. Their key areas of concern are how classes are conducted during floods, why lessons are interrupted, what happens to students when schools open, why enrollment fell, road accessibility, and other related topics. They speak with local authorities about the mitigation measures; if there was an issue with drainage water, they attempted to resolve it; if a family involved their child in a home course, they spoke with the parents and made sure school buildings were secure. They launched a program called One School for One Municipality, with a primary focus on texts books, student-teacher relationships, disaster identification, rating, and curriculum activities. In the upcoming days, they hope to concentrate more on the loss and damage criteria.

## **CHAPTER 5**

### **CONCLUSION AND RECOMMENDATION**

#### **5.1 Conclusion**

The study examined impact of flood on children's education and coping mechanisms to lessen the negative consequences. Flooding is mostly common occurrence in Wards 1, 3, 4, 7, and 10 of Rajapur municipality, making them very susceptible to it.

The small-scale flood has the biggest chance of affecting those damaged institutions and threatening future kid protection. After fifty years of operation, the majority of the school buildings appear to be renovated for long-term usage. The 2072 BS earthquake damaged the majority of school buildings; these damages are currently unrepaired, which increases their susceptibility to localized flooding. In very highly and highly risks area, it is recommended to build flood resistant structures to minimize the impact of floods on the education sector. Most of the schools does not meet the standards in terms of School Students Teacher Ratio (SSTR), Students Toilet Ratio (STR), which needs to be maintained for the improve school resources and education quality.

According to the results, the academic performance in ward no. 3 appears to decrease following the flood. This is attributed to the limited presence of schools in that area specially, two primary schools and one basic school. In contrast, ward no.4 experience a higher academic performance, as it encompasses a vast catchment area and hosts a greater number of schools, comprising two primary schools and five secondary schools. Janchetana Secondary School has the highest rate of promotion for both genders over the past five years out of all 23 schools. It also highlights a significant number of students and ranks second for the rate of repeaters. This school offers weaker kid additional classes, which helps them achieve better outcomes. Over the past five years, Geruwa Primary School has had the fewest amounts of students promoted. This could be the result of fewer students overall than at other schools. It is an amazing achievement for Nabha Prativa Secondary School to have one male and zero female repeat student. This may be as a result of the excellent learning environment and additional classes offered to the less proficient students.

In both wards 10 and 4, the dropout rate is observed to be elevated for both genders, as it encompasses a vast catchment area and hosts a greater number of schools, compromising three primary school, one basic school, two secondary schools and two primary school, five secondary

schools in respective wards. Sahid Amar Dasratha Chandra Secondary School with regard to both genders combined, has the highest dropout rate. The condition is result of large number of students occupying greater space to them. Early marriage, family economic crises, student interest in courses, and helping with housework are the principle causes of dropout as per the KII. In the last five years, Occidental Academy has not experienced any dropout rates. This could be the result of students placing a higher priority on education and parent-student communications. To mitigate the dropout rate, enhancing the relationship between teacher, parents and students is crucial. This improvement can contribute to a better understanding of the challenges faced by the involved parties.

Current flood management methods in Nepal are insufficient, given the increasing frequency and severity. In the study area, short-term coping strategies focus on safeguarding school resources during the rainy season, including relocating items, providing stationary to affected students, and conducting awareness drills. However, these are limited in addressing long-term resilience. To enhance flood resilience in Rajapur, an integrated approach is essential, incorporating community-based early warning systems, infrastructure improvements, and sustainable land-use planning

## **5.2 Recommendations**

While effective, current coping strategies to lessen the impact of floods on children's education do not improve the standard of education.

- In order to fulfill the national standards for education at every level, STR and SSTR should be balanced.
- A well-planned drainage system should surround the school.
- A well flood resilience and earthquake resilience school building should be constructed and can be done maintain work.
- Upgrades should be made to the facilities at schools (science lab, computer lab, clean drinking water, clean toilet) which will help to improve academic performance.
- Teachers receive training to increase their technological literacy.
- Community awareness seminar should be lunch to develop the interest of parent and students towards study and avoid school dropout.
- Install advanced flood warning in school for prompt alerts, ensuring safety and timely evacuation of all.

- During floods deteriorate water quality, rainwater harvesting techniques can be used.
- It is recommended to place toilets inside the school building rather than on the playground to mitigate the impact of floods.

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## APPENDICES

### Appendix A: Questionnaire for Principal (KII)

Name: ..... Ward no: .....  
School Name: .....  
Duration of service: ..... Contact no: .....

1. Have floods affected your school in the past five years?
  - a) Yes
  - b) No
2. If yes, please specify the frequency of flood-related disruptions to education;
  - a) Rarely
  - b) Occasionally
  - c) Frequently
  - d) Always
3. What aspects of education were most impacted by floods?
  - a) Attendance of students
  - b) Teaching and learning materials
  - c) Teacher availability
  - d) Infrastructure damage
  - e) Other (please specify): .....
4. On a scale of 1 to 5, how severe was the impact of floods on education in your school?  
( 1= Not severe, 5 = Extremely severe)
  - a) 1
  - b) 2
  - c) 3
  - d) 4
  - e) 5
5. Have floods caused damage to the school's infrastructure in the past five years?
  - a) Yes
  - b) No
6. Please specify the types of infrastructure damage caused by floods:
  - a) Classroom building
  - b) Administrative buildings
  - c) Schoolyard/ playground
  - d) Sanitation facilities (e.g., toilets)
  - e) Other (please specify): .....
7. How long did it take to repair the flood-related infrastructure damage?
  - a) Less than a month
  - b) 1-3 months
  - c) 3-6 months
  - d) 6-12 months

- e) More than a year
  - f) Infrastructure damage has not been repaired yet
8. On a scale of 1 to 5, how severe was the impact of floods on school infrastructure? (1= Not severe, 5= Extremely severe)
    - a) 1                      b) 2                      c) 3                      d) 4                      e) 5
  9. Do you have some insurance policy for repairing damage infrastructure?
    - a) Yes                      b) No
  10. Does your school have a flood preparedness and response plan in place?
    - a) Yes                      b) No                      c) Not sure
  11. If yes, please briefly describe the key components of the plan.
  12. Has your school received any support or assistance from government agencies or non-governmental organizations to mitigate the impact of flood on education and infrastructure?
    - a) Yes                      b) No
  13. If yes, please specify the type of support received.
  14. Please provide any additional comments or insights regarding the impact of floods on children's education and infrastructure in your school;
  15. During flooding incidents, did the school have to close temporarily?
    - a) Yes                      b) No
  16. On average, how many days did the school remain closed during each flooding incident?
  17. Did flooding incidents lead to any of the following disruptions to student education?
    - a) Decreased attendance
    - b) Disruption of regular classroom activities
    - c) Damage to teaching and learning materials
    - d) Impact on academic performance
    - e) Emotional distress among students
    - f) Others.....
  18. Has your school implemented any specific measures to mitigate the impact of floods on student education?
    - a) Yes                      b) No



**Appendix B: Dropped out and promoted students of Rajapur in last five years**

In ward 1	total dropout male	total dropout female	Total promoted male	Total promoted female	year
	54	57	423	556	2018/2019
	54	42	410	537	2019/2020
	48	43	466	490	2020/2021
	30	29	501	568	2021/2022
	57	39	421	499	2022/2023
<b>In ward 3</b>	28	14	127	147	2018/2019
	9	8	103	144	2019/2020
	32	28	126	148	2020/2021
	16	9	123	137	2021/2022
	10	5	127	136	2022/2023
<b>In ward 4</b>	245	209	1179	940	2018/2019
	181	122	1078	909	2019/2020
	167	140	1300	1187	2020/2021
	134	91	1197	1057	2021/2022
	136	138	1116	1051	2022/2023
<b>In ward 7</b>	24	13	199	270	2018/2019
	2	6	203	268	2019/2020
	17	21	205	251	2020/2021
	0	0	202	270	2021/2022
	11	5	188	208	2022/2023
<b>In ward 10</b>	91	93	734	794	2018/2019
	25	13	768	728	2019/2020
	38	33	878	886	2020/2021
	137	108	686	774	2021/2022
	50	20	718	627	2022/2023

## Appendix C: Photographs



A. Gathering information from Practical Action and CSDR



B. Principal sir giving classroom tour



C. Damaged wall



D. Students taking class in unrepaired classroom



E. Reconstructed school building



F. Students under damaged ceiling



G. Drinking water



H. Well equip water filter



I. Good initiative to control plastic control



J. Students outside the classroom



K. KII with principal



L. Students bicycle during school hour at school ground



M. Questionnaire survey with subject teachers



N. Safe Shelter



O. Previous years flood



P. Damaged floor at classroom



Q. Focus group discussion with parents



R. Unrepaired school boundary wall due to flood