

Formative Research Project (FRP) for School Sector Reform Program (SSRP)

Longitudinal Study on System Indicators

Research jointly conducted by

Research Centre for Educational Innovation and Development (CERID)

and

Department of Education (DOE)



Tribhuvan University

Research Centre for Educational Innovation and Development (CERID)

Balkhu, Kathmandu, Nepal

2014

Research Team

Prof. Dr. Kishor Shrestha – Coordinator
Mr. Raju Manandhar – Researcher
Mr. Rom Prasad Bhattarai – Associate Researcher
Mr. Kamal Pokharel - Consultant
Mr. Balaram Timilsina - Consultant
Mr. Kewali Ram Adhikari - Consultant

Advisory Committee

Prof. Dr. Krishna Chandra Sharma, Executive Director – CERID
Prof. Dr. Kishor Shrestha, Coordinator – CERID
Dr. Lava Deo Awasthi, Director General – DOE
Mr. Kamal Pokharel, Director – DOE
Mr. Kewali Ram Adhikari, Deputy Director – DOE
Mr. Raju Manandhar, Researcher – CERID

Data Management and Field Research

Mr. Purushottam Manandhar
Ms. Anjana Rajbhandari
Mr. Amul Raj Upreti

Field Researchers

Mr. Jaya Ram Thapa
Mr. Murari KC
Ms. Shanti Joshi

Administrative and Logistic Support

Ms. Rekha K.C.
Ms. Sabita Mishra
Mr. Hari Krishna Shrestha
Mr. Bhakta Bahadur Shrestha

Acronyms and Abbreviations

CERID	Research Centre for Educational Innovation and Development
DEO	District Education Office(r)
DOE	Department of Education
ECD	Early Childhood Development
ECED	Early Childhood Education and Development
EFA	Education for All
FRP	Formative Research Project
GPI	Gender Parity Index
ID	Identity
LongSIS	Longitudinal Study on System Indicators
MOE	Ministry of Education
MOES	Ministry of Education and Sports
PTA	Parent Teacher Association
PTR	Pupil Teacher Ratio
RED	Regional Education Directorate
RP	Resource Person
SIP	School Improvement Plan
SLC	School Leaving Certificate
SMC	School Management Committee
SS	School Supervisor
SSRP	School Sector Reform Program
STR	Student Teacher Ratio
UNESCO	United Nations Educational, Scientific and Cultural Organization
VDC	Village Development Committee
VEC	Village Education Committee

Executive Summary

School Sector Reform Program (SSRP) 2009-2015 has been implemented in Nepal by Government of Nepal through Ministry of Education/Department of Education. In this context, Longitudinal Study on System Indicators (LongSIS) as a part of the Formative Research Project (FRP) for School Sector Reform Program (SSRP), the study is commenced jointly by Department of Education (DoE) and Research Centre for Educational Innovation and Development (CERID), Tribhuvan University.

The cohort analysis of the three student cohorts enrolled in Grade I in the years 2002, 2003 and 2004 are presented in this report. In the year 2013, the students who were enrolled in Grade I in those years in a normal flow should be studying in Grade XII, Grade XI and Grade X respectively, if they have not repeated any grades or not left the school.

One out of ten students enrolled in Grade I reached Grade X in ten successive years. In this way, reaching Grade II from Grade I appears to be the most difficult hurdle for the students. The ECD experience was helpful for the students to tackle with this hurdle. There was no significant difference made by the sex of the students in reaching the higher grades.

The linear trend shows a decline in student enrolment in Grade I since the year 2007. This decreasing trend of student enrolments has increased per student classroom space in the sample schools. The education attainment of teachers in the sample schools in increasing trend.

Acknowledgements

Formative Research Project for School Sector Reform Program: Longitudinal Study on System Indicators is the continuation of the studies that has conducted for Ministry of Education/Department of Education since the year 2002. The study has so far conducted analysis on various indicators defined in close collaboration with the MoE/DoE and study team, since the commencement of the study in 2002. The information provided by the study to MoE/DoE has been found to be very relevant in order to facilitate its process of planning, implementing, monitoring and managing SSRP programs.

On behalf of the study team, CERID would like to take the privilege to thank and acknowledge the continuous collaboration and valuable support of all the head teachers and teachers of the sample schools for the role they have played in collecting and ensuring the quality of data.

I would also like to thank Dr. Lava Deo Awasthi, Director General, Mr. Kamal Prasad Pokharel, Director, Mr. Balaram Timilsina, Deputy Director and Mr. Kewali Ram Adhikari, Under Secretary of DoE for their support in successfully accomplishing this study. Last but not the least, I appreciate the administrative staff members of CERID for their support and thank them all for their unceasing commitments to the study.

Prof. Dr. Krishna Chandra Sharma

Executive Director

2014

Table of Contents

Acronyms and Abbreviations	ii
Executive Summary	iii
Acknowledgements	iv
List of Tables	vi
List of Charts	vii
List of Map	vii
Chapter I: Introduction	1
Background	1
Scope for LongSIS in SSRP	1
Objectives	2
Methodology	2
Sample	2
Tools	3
Data Collection Procedures	4
Limitations	5
Chapter II: Cohort Flow of Students	6
Student Cohort Flow (2002)	7
Student Cohort Flow (2003)	8
Student Cohort Flow (2004)	9
Comparison of Student Flow by Cohorts	10
Student Flow by Gender	11
Student Flow with ECD	13
Chapter III: Trend Analysis of Selected Indicators	15
Student Enrolment	15
Per Student Classroom Space	15
Teachers Qualification	16
Teachers and Ethnicity	17
Chapter IV: Major Findings and Recommendations	18
Major Findings	18
Recommendations	18
References	20

List of Tables

Table 1: Number of Sample Schools by District and Stratum	3
Table 2: Years and Grades the Data Collected in 2013	4
Table 3: Student Cohort Flow (2002)	7
Table 4: Student Cohort Flow (2003)	8
Table 5: Student Cohort Flow (2004)	9

List of Charts

Chart 1: Student flow in the three cohorts.....	10
Chart 2: Flow of Girl and Boy Students in 2002 Cohort.....	11
Chart 3: Flow of Girl and Boy Students in 2003 Cohort.....	11
Chart 4: Flow of Girl and Boy Students in 2004 Cohort.....	12
Chart 5: Flow of Students with ECD in 2002 Cohort.....	13
Chart 6: Flow of Students with ECD in 2003 Cohort.....	14
Chart 7: Flow of Students with ECD in 2004 Cohort.....	14
Chart 8: Student Enrolment Trend in Grade I.....	15
Chart 9: Per Student Classroom Space (in sq. ft.).....	16
Chart 10: Distribution of Teachers by Educational Attainment.....	16
Chart 11: Distribution of Teachers by Ethnicity.....	17

List of Map

Map 1: Sample districts on Map.....	3
-------------------------------------	---

Chapter I: Introduction

Background

As earlier years, FRP for SSRP conducted by CERID has aided the MOE/DOE for the enactment of SSR Programs effectively. In collaboration with CERID, DOE has jointly conducted the Longitudinal Study on System Indicators (LongSIS). In the year 2014 the study has continued the study in the 15 schools of five districts of Nepal.

The data collected from the 15 schools have revealed interesting and useful data and information on various aspects and indicators of the SSRP being implemented in the country. LongSIS being an important component of FRP provided statistical data on the basis for trend analysis.

The indicators included brief student profile: name, gender, age, social group, enrolment, promotion, and drop-out. LongSIS has been conducting cohort analysis of students enrolled at Grade I since 2002 and the subsequent years using this data. The study has provided quantitative database information to facilitate the smooth implementation of SSRP by generating research based information for progress monitoring and critical understanding of the issues for strategic policy revisions.

This study is featured with software designed for the study for keeping the record of students' enrolment, retention, promotion, attendance, achievement, and information on teachers' qualification, training and experiences, and background of the parents since the year 2002. The study has utilized these data and information for trend and cohort analysis. The students have been followed up through student tracking system for which each individual student is given a unique Student ID for all the students of 16 sample districts. The collected data are computerized in the software designed for the purpose of computing and analysis using MS Access program.

Scope for LongSIS in SSRP

The LongSIS has been an important component of FRP. During the implementation of BPEP II, FRP was launched to facilitate its smooth implementation by generating research based information for progress monitoring and critical understanding of the issues for strategic policy revisions. It provided statistical data and a basis for trend analysis. The FRP and LongSIS were found useful and therefore continued in the implementation of EFA 2004-09.

LongSIS basically seeks information that focuses on the "WHAT" aspects of program activities by using the selected indicators, whereas the in-depth studies basically focus

on “WHY”. In this sense, the former, by and large, generates key research questions for the latter. LongSIS attempts to continuously provide periodic information on attainment of targets pertaining SSRP. Most notably, it has made a remarkable breakthrough in systematizing the individual students’ cohort data of the year 2002 as the base year. This is the first attempt of conducting this kind of research by CERID in Nepal.

The study has also adopted students’ tracking system. Detailed information of all the students enrolled in Grade I was gathered in the first year of the study. Similarly, the information of these students was updated in every year and also the information of new entrants of Grade I was collected.

The study basically focuses on trend analysis and cohort analysis. This part of the report presents the cohort analysis of the three student cohorts enrolled in Grade I in the years 2002, 2003 and 2004.

Objectives

The main objectives of this study are as follows:

- To provide research-based information on basic indicators to MOE/DOE for monitoring the attainment regarding the set targets of SSRP
- To find out internal efficiency of school system by using Cohort Analysis

Methodology

Especially individual student tracking study is the first of its kind in Nepal. The study attempted to do the cohort analysis by giving ten digit unique students ID to each individual student of sample schools. The data have been collected from 15 schools of the five districts of Nepal, only schools with Grade 1 – 10 will be included for the Cohort Analysis.

Sample

As in Nepal, there are three geographical regions (mountain, hill and tarai) and five development regions. The sample districts have been selected in order to incorporate these geographical and development regions. From each sample district, 2 to 5 sample schools are included in the Study. The sample districts by number of sample schools are given in Table 1:

Table 1: Number of Sample Schools by District and Stratum

SN	District	Development Region	Geographical Region	Number of sample schools
1	Dhankuta	Eastern	Hill	2
2	Rasuwa	Central	Mountain	3
3	Syangja	West	Hill	4
4	Banke	Mid-West	Terai	3
5	Dadeldhura	Far-West	Hill	3
Total				15

Map 1: Sample districts on Map



Tools

The laptop computers were used in order to gather the information directly from the schools. The information was directly computerized in the software installed in laptops of the field researchers.

The information was collected in these four categories:

1. School Information

The general information of the sample school was collected. The location, address, type of school, number of students in all grades, classroom size, etc. are included in this form.

2. Student Information

The student information includes the basic information of the students, their caste/ethnicity, and information about their parents, monthly attendance, final achievement scores, and the status in the final school examination.

3. Teacher Information

Basic information of the teachers of the sample school was collected. The information on the work experience, level, training, attendance, etc. of the teachers was collected in this form.

4. School Finance and Other Information

The information on library, income and expenditure, SIP, PTA, VEC, and school visits by different personnel was collected.

Data Collection Procedures

The data were collected by the team of researchers from CERID by visiting the all the 15 sample schools in the five sample districts. The team visited the sample schools and gathered the necessary information from each school.

In four sample districts the laptops were used to computerize the data at school level by the researchers, however, due to some technical reason this was not done in Dhankuta district and the collected data were computerized back in CERID. The experienced and dedicated team members were able to manage to get very vital and essential information for the cohort and trend analysis within this time limitation.

The years and grades the data collected in this year from the sample school is presented in Table 2.

Table 2: Years and Grades the Data Collected in 2013

BS		2059	2060	2061	2062	2063	2064	2065	2066	2067	2068	2069	2070
	AD	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
2059	2002	1											
2060	2003	2	1										
2061	2004	3	2	1									
2062	2005	4	3	2	1								
2063	2006	5	4	3	2	1							
2064	2007	6	5	4	3	2	1						
2065	2008	7	6	5	4	3	2	1					
2066	2009	8	7	6	5	4	3	2	1				
2067	2010	9	8	7	6	5	4	3	2	1			
2068	2011	10	9	8	7	6	5	4	3	2	1		
2069	2012		10	9	8	7	6	5	4	3	2	1	
2070	2013			10	9	8	7	6	5	4	3	2	1

Limitations

As the limitation of time and resources available for the study, comparison has been made only in a few of the indicators. There are tremendous possibilities for looking in the various characteristics of education of Nepal by using huge amount of information gathered in the course of this study using other statistical analysis; however this has not been explored in this report.

Chapter II: Cohort Flow of Students

The analysis of three cohorts of student who were enrolled in Grade I and reached Grade X without repeating any grades in ten consecutive years is presented in the following section.

Only the students who were enrolled in Grade I as fresh new entrants were included and analysed in this student cohort flow.

The repeater students who were already in Grade I have been excluded from overall student flow. The school leaver students are also not included in the analysis.

Student Cohort Flow (2002)

The overall student flow of the cohort 2002 is presented in the following table. The number of students enrolled in Grade I in the year 2002 is taken as the base year and as 100 percent. The number and percentage of students who were upgraded in the subsequent years are presented in the table.

Table 3: Student Cohort Flow (2002)

Year	Grade									
	I	II	III	IV	V	VI	VII	VIII	IX	X
2011										25 (10.0)
2010									30 (12.0)	
2009								32 (12.8)		
2008							43 (17.2)			
2007						51 (20.4)				
2006					67 (26.8)					
2005				76 (30.4)						
2004			94 (37.6)							
2003		160 (64.0)								
2002	250 (100)									

The figure shows that out of total students enrolled in Grade I in 2002, only 64 percent students were promoted to Grade II in the next year. About 27 percent reached Grade V in the five subsequent years without repeating any grades. Similarly, about 13 percent reached Grade VIII in 8 subsequent years. On the tenth year, 10 percent students reached Grade X.

Student Cohort Flow (2003)

The flow of student cohort of the year 2003 who enrolled in Grade I in 10 years is shown in the following table.

Table 4: Student Cohort Flow (2003)

Year	Grade									
	I	II	III	IV	V	VI	VII	VIII	IX	X
2012										25 (8.8)
2011									26(9.8)	
2010								36 (12.6)		
2009							37 (13.0)			
2008						44 (15.4)				
2007					60 (21.1)					
2006				75 (26.3)						
2005			101 (35.4)							
2004		147 (51.6)								
2003	285 (100)									

In 2003 cohort, out of total students newly enrolled in Grade I, about 52 percent students were promoted to Grade II in the year 2004. Similarly, about 21 percent reached Grade V in the five years without repeating any grades. About 13 percent students reached Grade VIII in 8 subsequent years. There were about 9 percent students reached Grade X in year 2012.

Student Cohort Flow (2004)

The flow of students' cohort, who was enrolled in Grade I as new entrants in the year 2004, is shown in the following table.

Table 5: Student Cohort Flow (2004)

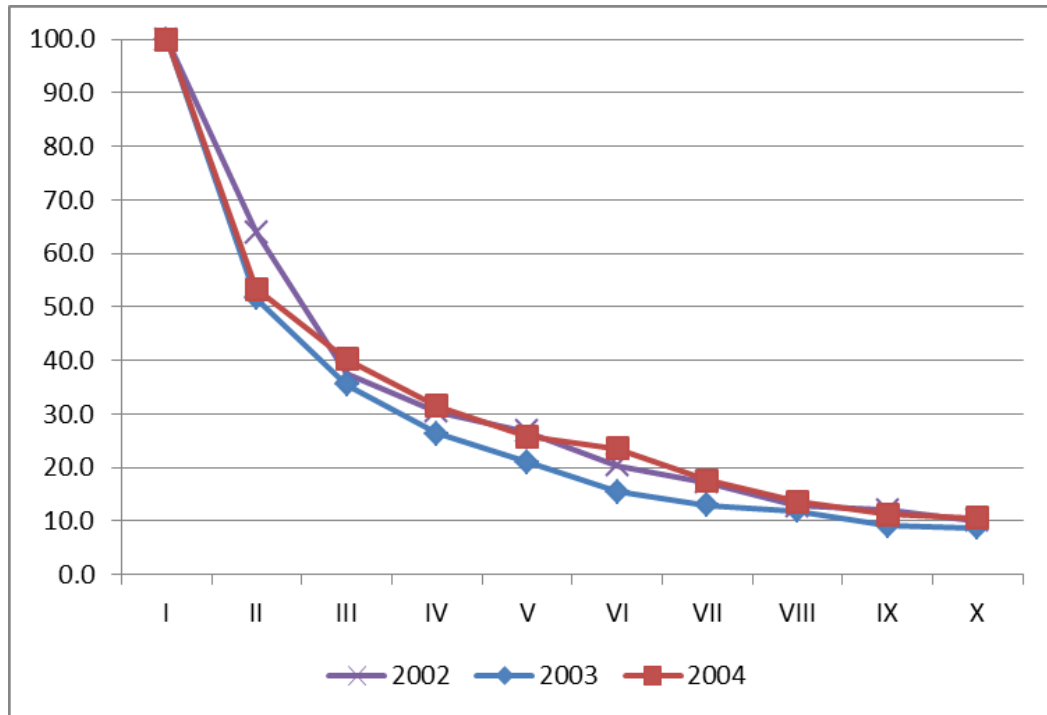
Year	Grade									
	I	II	III	IV	V	VI	VII	VIII	IX	X
2013										35 (10.6)
2012									37(11.2)	
2011								45 (13.6)		
2010							58 (17.6)			
2009						78 (23.6)				
2008					85 (25.8)					
2007				104 (31.5)						
2006			133 (40.3)							
2005		176 (53.3)								
2004	330 (100)									

More than 53 percent students of the new entrants of Grade I in the year 2004 reached Grade II in the next subsequent year. Almost 26 percent students reached Grade V in the year 2008. About 14 percent students reached Grade VIII in 8 years. Similarly about 11 percent students out of total students enrolled as new entrants reached Grade 10 in ten subsequent years without repeating any grades.

Comparison of Student Flow by Cohorts

The flow of students in the three cohorts is presented in the following chart.

Chart 1: Student flow in the three cohorts



The students' flow of the 2002 cohort who enrolled in Grade I as new entrants and reached Grade II in the next year are comparatively higher to later two cohorts. The chart shows more than half of the students enrolled in Grade I as new entrants reached Grade II in the second year.

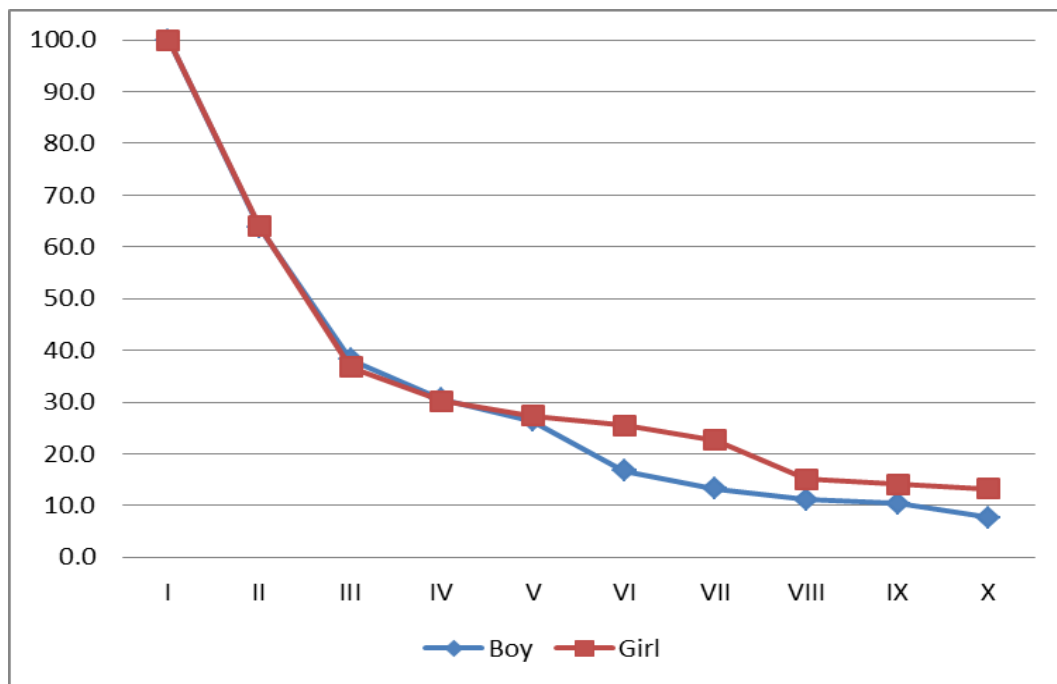
In the successive five years the pattern in all three cohorts are almost similar to reach Grade V and Grade VIII in fifth and eighth year respectively. However, the percentage of student flow of 2003 cohort is comparative lower than other two cohorts from 3rd to 7th grades and the difference is higher in 6th grade.

The figure shows around one out of ten student reached Grade X in ten subsequent years without repeating any grades in these three cohorts.

Student Flow by Gender

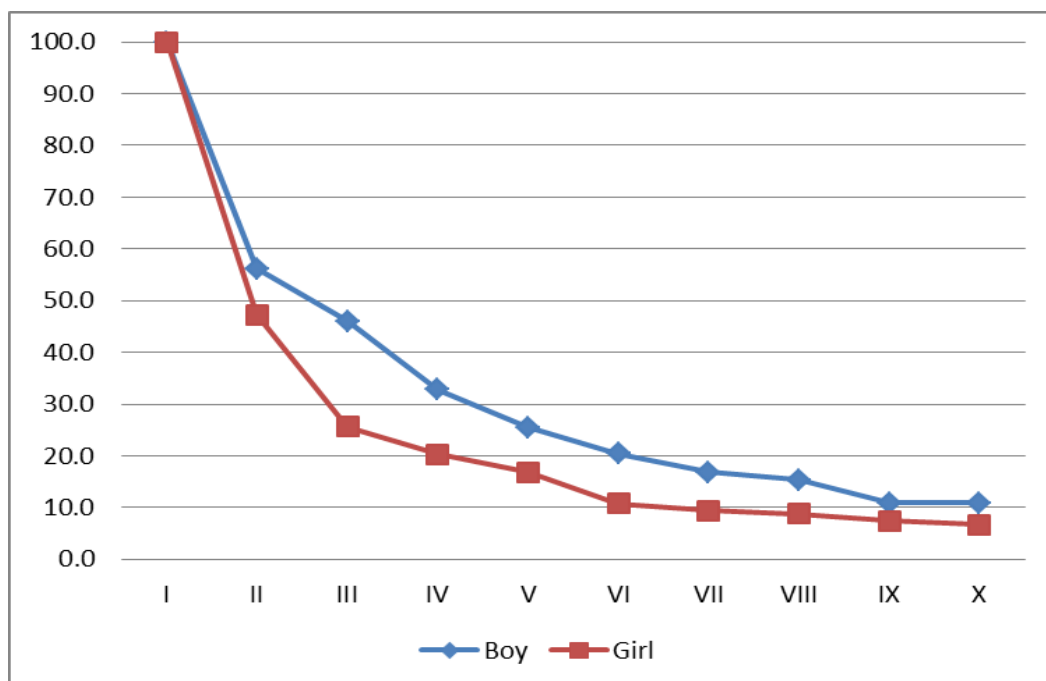
The gender of the students and the differences in the pattern of their flow in different grades in the successive years are presented in this section.

Chart 2: Flow of Girl and Boy Students in 2002 Cohort



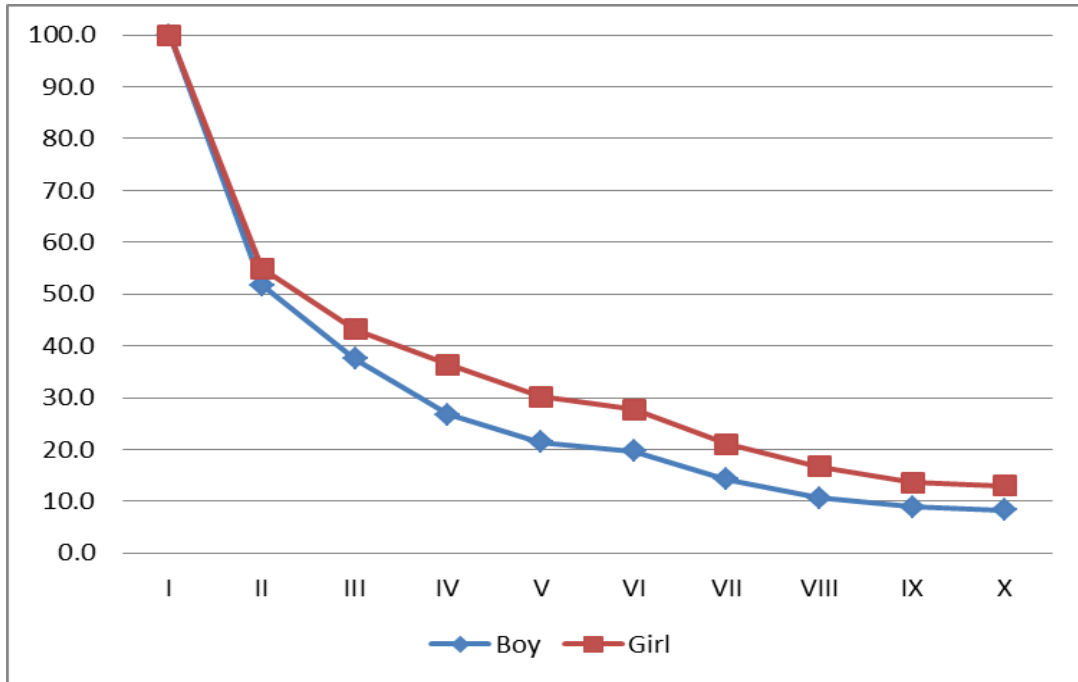
There is no significant difference in the flow of girl and boy students' up to Grade V. The girl students' flow is higher than boy students' flow from Grade VI onwards. The difference is higher in 6th and 7th grades.

Chart 3: Flow of Girl and Boy Students in 2003 Cohort



The chart shows that in 2003, the percentages of boy students' cohort flow is higher compared to girl students' flow in all the grades up to Grade X. The difference is highest in Grade III.

Chart 4: Flow of Girl and Boy Students in 2004 Cohort



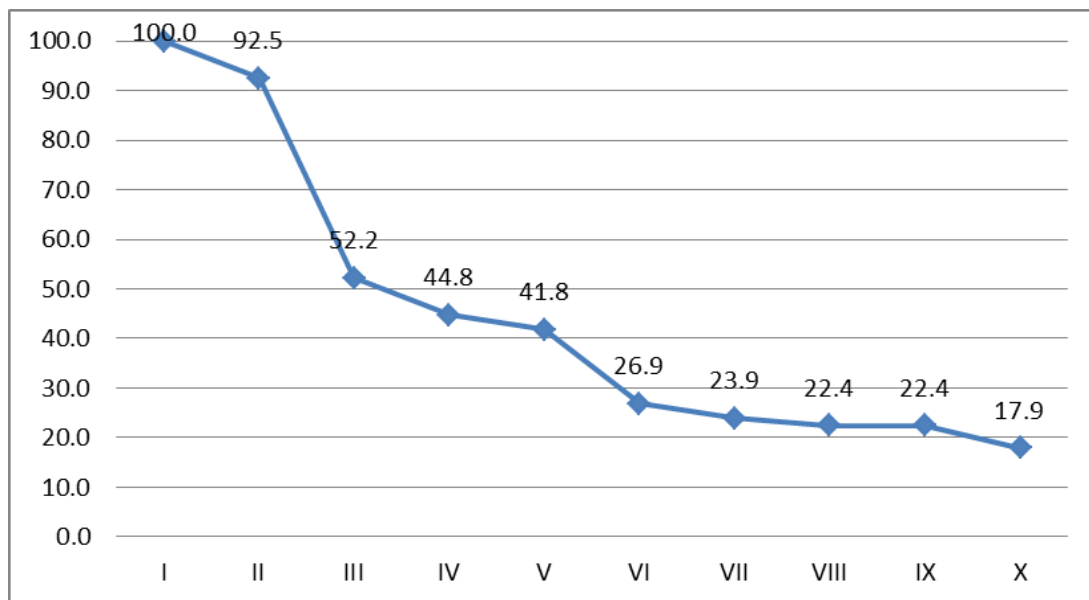
The girl students' flow is higher compared to boy students' flow in all the grades up to Grade X in 2004 cohort.

Student Flow with ECD

During the initial stage of LongSIS in the year 2002, with 62 sample schools of 16 districts of Nepal, there were very few schools and very few students enrolled in Grade I with ECD experience.

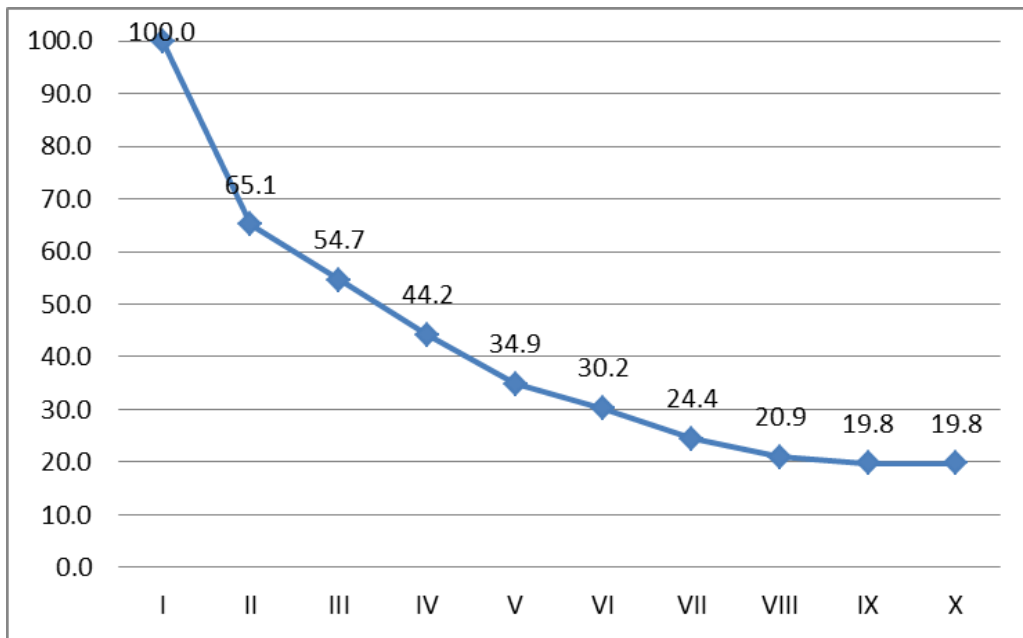
In the present context with the reduced sample size of only 15 schools from 5 districts, there are only two schools which had students with ECD experience prior to their enrolment in Grade I in the years 2002-2004. This analysis is based on only two out of 7 secondary schools where students with ECD experience prior to their enrolment in Grade I were found.

Chart 5: Flow of Students with ECD in 2002 Cohort



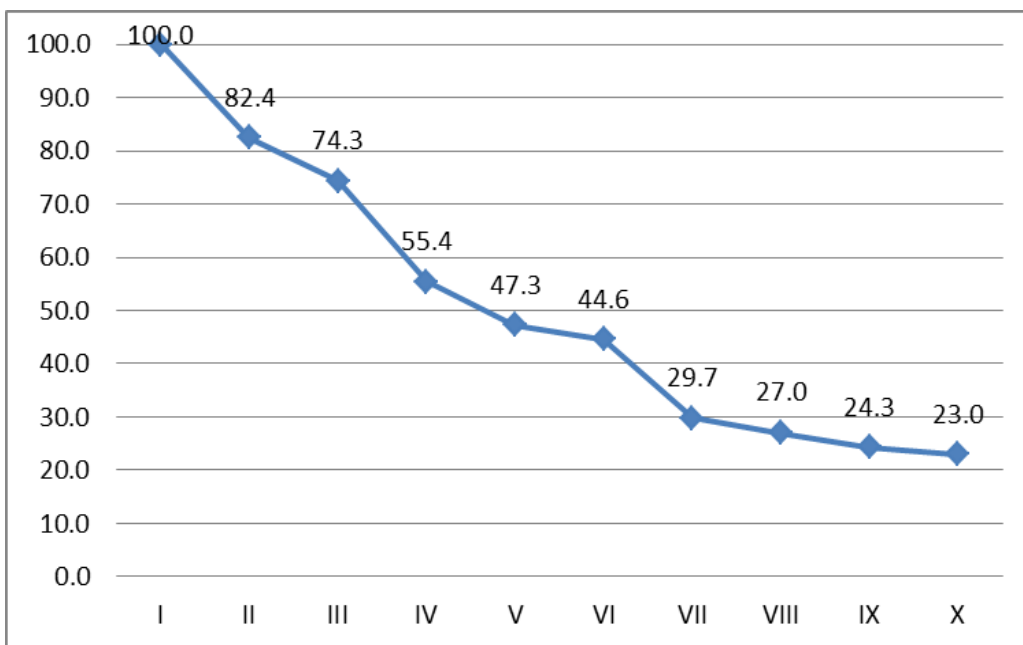
In the 2002 Cohort, the students flow with ECD experience showed about 93 percent students were promoted to Grade II in the second year. However, it shows that the percentage has dropped to around 52 percent in Grade III. The percentage of drop is also noticeable in the 6th year. There is also about 5 percent drop in the percentage of students from Grade IX to Grade X.

Chart 6: Flow of Students with ECD in 2003 Cohort



There is a sudden drop on the percentage of students from Grade I to Grade II. However there is gradual decrease in the percentage of students till the 10th grade.

Chart 7: Flow of Students with ECD in 2004 Cohort



The chart shows that more than 82 percent student enrolled in Grade I with ECD experience reached Grade II in the subsequent year.

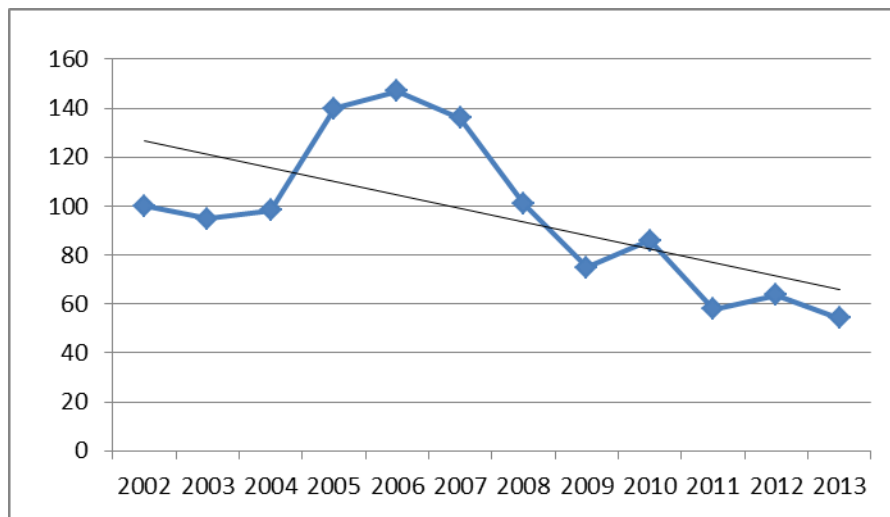
Chapter III: Trend Analysis of Selected Indicators

Trend Analysis has been done by taking the year 2002 as the base year and the percentages are calculated accordingly. In this section the trend analysis of some pertinent indicators is done over a period of time 2002-2013.

Student Enrolment

The student enrolment trend in Grade I in the sample schools is presented in the following chart.

Chart 8: Student Enrolment Trend in Grade I

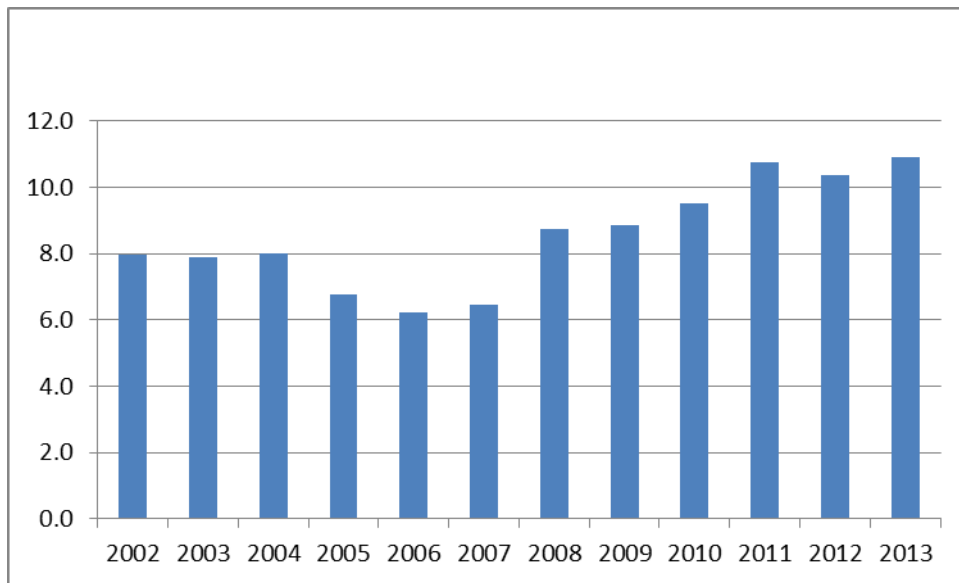


The student enrolment trend in Grade I shows a noticeably peaked up from the year 2004 to 2005. There is more rise in the percentage of student enrolment in Grade I in the year 2006 in the sample schools. The trend shows a decline in student enrolment in Grade I since the year 2007; however in 2010 it increased and started falling again in the subsequent years. The linear trend line shows that the enrolment of students in Grade I is in decreasing trend from 2002 to 2013.

Per Student Classroom Space

The Education Regulation has set 0.75 sq. meters i.e., 8.1 sq. ft. per student classroom space for Basic Level. The available space for the students in the sample schools during the study period is presented in this section.

Chart 9: Per Student Classroom Space (in sq. ft.)

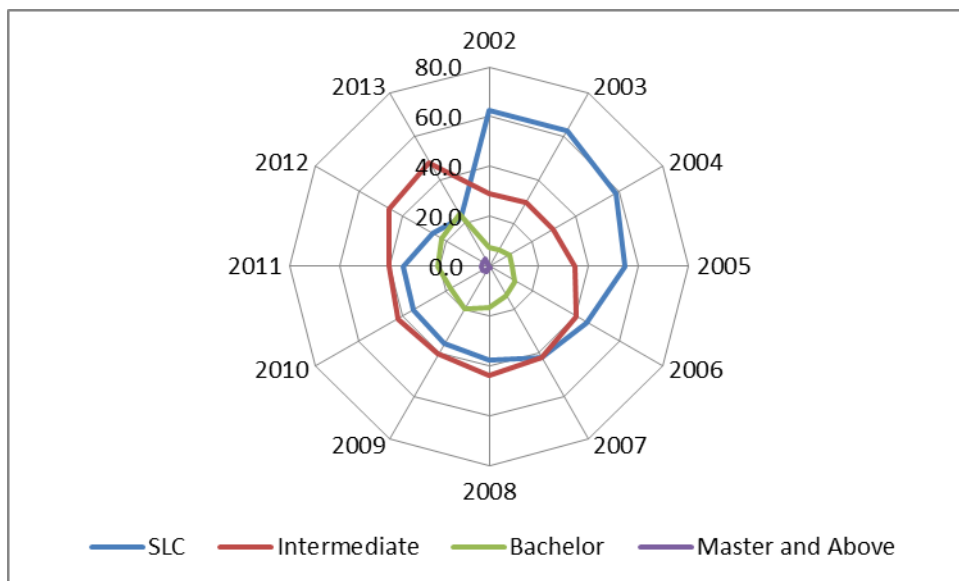


The measurement of per student classroom space was in par with the government norms in the beginning years of the study. Then the sudden increase in the student enrolment in the years 2005 to 2007 has decreased the per student classroom space. Again, the decrease in the student enrolment since 2008 has increased per student classroom space.

Teachers Qualification

The distribution of teachers by their educational qualification in the sample schools is analysed in the section.

Chart 10: Distribution of Teachers by Educational Attainment



In the base year 2002, that the majority of teachers were with the educational qualification of SLC, which gradually started decreasing in the subsequent years and there were only

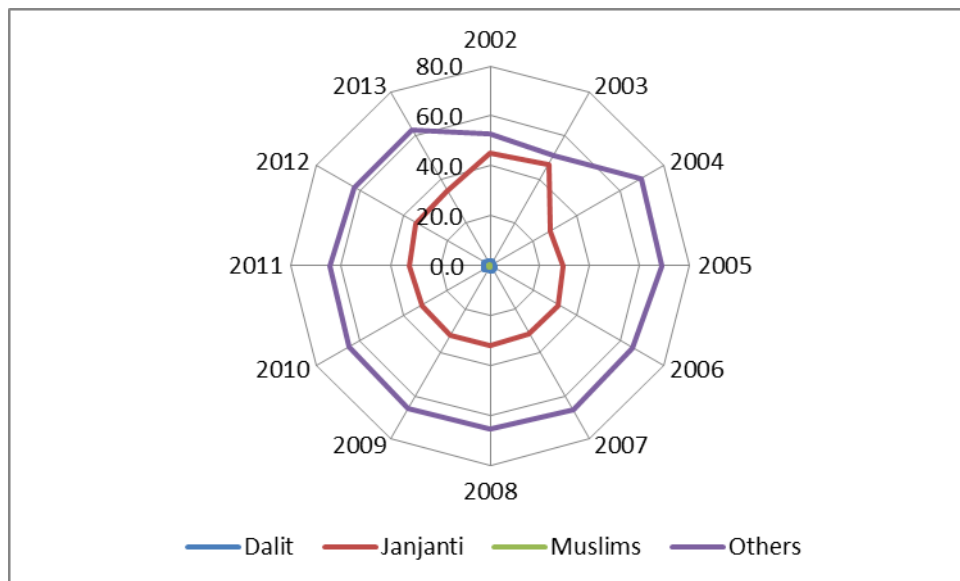
around 26 percent teachers with SLC in the year 2012 and I further lessened to 22 percent in the year 2013. The percentage of teachers with the qualification of Intermediate level has started increasing gradually from 2002 in the subsequent years. There were around 49 percent teachers with Intermediate level of educational qualification.

The percentage of teachers with Bachelor Level of educational qualification reached to 24 percent in the year 2013, when there were only about 8 percent in the year base year 2002. There are more than 3 percent teachers with Masters Level of educational qualification in year 2013 whereas there were no teachers with such educational qualification.

Teachers and Ethnicity

The following figure shows the distribution of teachers by their ethnicity in the sample schools.

Chart 11: Distribution of Teachers by Ethnicity



The majority of the teachers were from others (Bhramin/ Chhetri) and Janajati ethnicity; and there were a very few percentage of teachers from Dalit ethnicity as shown in the Chart 11. There was no single Muslim teacher in the sample schools till 2006 since the beginning of the study, however there are very negligible numbers of Muslim teachers then after in these schools.

Chapter IV: Major Findings and Recommendations

The major findings and recommendations of the study are presented in this section. The overall recommendations based on the major findings from both cohort and trend analysis is presented.

Major Findings

- One out of ten students reached Grade X in ten subsequent years without repeating any grades.
- The flow of the students shows that Grade I to Grade II appears to be the most difficult hurdle for all the cohorts, with the lowest flow.
- The ECD experience prior to enrolment to Grade I has found to be helpful to tackle this hurdle.
- There was no visible difference in the flow of students up to Grade X by sex of the students.
- The linear trend shows a decline in student enrolment in Grade I since the year 2007.
- Per student classroom space was in par with the government norms in the beginning years of the study; however decreasing trend of student enrolments has increased per student classroom space in the sample schools.
- The education attainment of teachers in the sample schools in in increasing trend.
- The composition of the teachers by their ethnicity has not change much more during the study period.

Recommendations

- The characteristics of the schools and students such as physical facilities, qualification/training of teachers, sex, attendance, achievement scores, student family background, etc. need to be statistically analyzed in order to enhance the internal efficiency of schools education. This will provide research based information to the policy makers.
- The stakeholders should take ownership of the data generated in the schools and use it for planning. The school level data keeping and the data analysis need to be

consistent in all the schools. The school level data keeping system needs to be strengthened at the school level for analysis, reporting and their use.

- The students should be given ECED experience prior to their enrolment in Grade I so that the hurdle of Grade I can be minimized.
- There is a need to encourage the potential individuals from so called “lower castes” and Muslim community to join the teaching profession.

References

- CERID. (2013), *Longitudinal Study on System Indicators, Cohort Analysis and Trend Analysis*. Kathmandu, Nepal: Author
- MOE/DOE (2012). *School Level Educational Statistics of Nepal Consolidated Report 2011 (2068)*. Sanothimi, Bhaktapur, Nepal: Author
- CERID. (2012), *Longitudinal Study on System Indicators, Cohort Analysis and Trend Analysis*. Kathmandu, Nepal: Author
- Government of Nepal (2012). *Mid-Term Evaluation of the School Sector Reform Program*. Kathmandu, Nepal: Author
- MOE/DOE (2011). *Flash I Report 2068 (2011- 012)*. Kathmandu, Nepal: Author
- MOE/DOE (2011). *School Level Educational Statistics of Nepal Consolidated Report 2010 (2067)*. Sanothimi, Bhaktapur, Nepal: Author
- MOE. (2009), *School Sector Reform Plan (2009-2015)*. Kathmandu, Nepal: Author
- CERID. (2009), *Longitudinal Study on System Indicators, Cohort Analysis and Trend Analysis*. Kathmandu, Nepal: Author
- CERID. (2007), *Longitudinal Study on System Indicators, Cohort Analysis*. Kathmandu, Nepal: Author
- CERID. (2005), *Longitudinal Study on System Indicators*. Kathmandu, Nepal: Author
- CERID. (2004), *Longitudinal Study on System Indicators*. Kathmandu, Nepal: Author
- CERID. (2003), *Longitudinal Study on System Indicators*. Kathmandu, Nepal: Author
- Department of Education. (2004). *Flash Report II*. Sanothimi, Nepal: Author
- Department of Education. *School Level Educational Statistics of Nepal*. Sanothimi, Nepal: Author
- Department of Education. *Flash Report I and II*. Sanothimi, Nepal: Author
- Garrett, H. E. & Woodworth, R.S. (1981). *Statistics in Education and Psychology*. Bombay: Vakils, Feffer and Simons Ltd.
- http://www.uis.unesco.org/i_pages/indspec/cohorte.htm