

**IMPACT OF CONTINUOUS ASSESMENT SYSTEM ON STUDENT'S
ACHIEVEMENT IN MATHEMATICS AT GRADE IV**

**A
THESIS
BY
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**FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF MASTER OF EDUCATION**

**TO
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UNIVERSITY CAMPUS
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LETTER OF APPROVAL

This thesis entitled **“Impact of the Continuous Assessment System on Student’s Achievement in Mathematics at Grade Four”** submitted by Mr. Krishna Prasad Pyakurel in Partial Fulfillment of the Requirement for the Master's Degree in Education has been approved.

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RECOMMENDATION FOR ACCEPTANCE

This is to certify that Mr. Krishna Prasad Pyakurel has completed his M. Ed. thesis entitled **“Impact of the Continuous Assessment System on Student’s Achievement in Mathematics at Grade Four”** under my supervision during the period prescribed the rules and regulations of Tribhuvan University Kirtipur, Kathmandu. I recommend and forward this thesis to the Department of Mathematics Education to organize final viva-voce.

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DEDICATION

This work is affectionately dedicated to my father **Mr. Mohan Prasad Pyakurel**

And mother **Mrs. Saraswota Pyakurel,**

Who even in a very difficult situation gave me a great span of their

Life for what I am now.

DECLARATION

I hereby declare that the work done in thesis entitle “Impact of continuous assessment system on student’s achievement in mathematics at grade four” has been submitted to Central Department of mathematics Education, Faculty of Education, Tribhuvan University, is my own created work reported in the form of partial fulfillment of the requirement of Master’s of Education Study (M.Ed.) course under the supervision of Assoc. Prof. Dr. Binod Prasad Dhakal of Central Department of Education, T.U.

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.....

Krishna Prasad Pyakurel

ABSTRACT

The present research entitle, “Impact of continuous assessment system on student’s achievement in mathematics at grade four ” to find the effect of continuous assessment system on student’s achievement in mathematics at grade four to find the compare the mathematics achievement of CAS student and non CAS student. This study is conducted in sunsari district. The sample of the study consisted 20 school and 200 students of Sunsari district. Researcher is developed achievement test paper and interview schedule are used for data collection. The mean, standard deviation and t-test are used for statically analysis.

The study is a survey research. All the students enrolled in grade four of Sunsari district are the population of the study. The selection of the school was by stratified random sampling for the selection of samples of the students. Purposive sampling method conducted and all corresponding teachers and student were the sample of the study. In the comparison of mathematics achievement of student of CAS and non CAS school, it was found that there was significant difference between CAS and non CAS system. It was found that the mean achievement score of students using Continuous Assessment System was higher than that of mean achievement score of student using non Continuous Assessment system in mathematics.

In the context of Nepal, CAS is not practiced seriously in government schools. On the basic of result, it can be concluded that when CAS is practiced in school level seriously, the mathematics achievement as well as increased.

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ABBREVIATIONS

BPEP	-	Basic Primary Education Project
CAPTE	-	Commission on Accreditation in Physical Therapy Education
CAS	-	Continuous Assessment System
CDC	-	Curriculum Development Centre
DOE	-	Development of Education
HLNEC	-	High level National Education Commission Report
MOE	-	Ministry of Education
NCED	-	National Centre for Educational Development
NECR	-	National Education Commission Report
NEPC	-	National Education planning Commission
NESP	-	National Education System Plan
NPC	-	The Ninth National Plan
SSRP	-	School Sector Reform Programmed

Chapter I

INTRODUCTION

Background of Study

The word "mathematics" comes from Greek word "mathemata" which is turn derived from "mathanein" meaning to learn. Mathematics was initiated from ancient human civilization such as Babylonian, Egyptian, Roman, Greek, Hindu and Chinese etc. Mathematics is an evicting and challenges subject which continuous to develop at a rapid rate across many research area. It has a natural elegance and beauty. Mathematics is used though the world as an essential tool in many field including natural science, engineering, medicine, finance and the social science, arts etc. The term mathematics may be considered in a number of ways. It is also related to measurement, calculations, discovery, relationship and dealing with the problems of space. So it can be considered as an exact science.

The term mathematics has been explained in various ways. There are very much diversity in the definition of mathematics has been explained in various ways. There are very much diversity it the definition of mathematics and there is no such a word or sentence to dentine it exactly. According to Advanced Learner dictionary Mathematics is the science of number and space including arithmetic, algebra, geometry and trigonometry. Mathematics is an abstract area of knowledge. It helps to an individual to develop his/her potentialities creating confidence for personality development. It gives an idea of thinking of any area of knowledge and creates his/her logical views towards. It makes an individual multi-dynamic and multivariable. According to cooling Dictionary (2003rd Ed.) of mathematics "mathematics is a group of related subjects including algebra, geometry, quantity, shaper and their relationship

allocation, generalization and abstraction". Thus it can be said that queen of science due to the role played by mathematics in the field of science and other discipline like agriculture, industry, business.

In Nepal, mathematic teaching in found education had been started from the establishment of Durbar High school in 1911 B.S Moreover, mathematics had been taught as a compulsory subject in basic school since the National Education System plan in 2018 B.S had given a significant place to mathematics in school education. Basic education is fundamentals stayed of formal education and design as eight years course. Now the main focus of the course is to develop the mathematics skills to solve daily life problems.

According to National Education System plan (1971-76) it was managed for district level exam in class three, where evolution was based on previous class internal assessment as well. In fact, 50% weight was allotted for class one and class two and 25% was for internal assessment for class three. Whereas only 25% weight was class three for external evaluation. This also implies the emphasis on internal type of assessments which is very closely related to the concepts of continuous assessment system.

The report of High Level National Education Commission (1998) recommended continuous assessment system for grade one to three. This was intended to continue the stay of the children by means of non-testing devices. While it was claimed, that serious educational wastage at the basic levels was due to defective examination system is annual examination system. Similarly both the Ninth plan (1997-2002) and the Tenth plan (2002-2007) stated to introduce continuous evaluation system as to basic level (National Planning commission Tenth plan). Now government of Nepal has made mandatory to basic school. But in fracture how it is

done and what effects it has given to student's achievement is not known. This study attempts to analyze the effectiveness of continuous assessment in basic school level.

Statement of the Problems

Mathematics has been taught in Nepal for every century. There are many problems in teaching and learning of mathematics. Mathematics teaching at school level does have measurable condition as yet. The perception of teacher plays vital roles in the overall teaching and assessment process. Most of the teachers in the context of Nepal are seemed to be less teacher's confidence towards in continuous assessment system.

The researcher intends to study "The impact of continuous assessment system on mathematics achievement at grade IV" students in the context of Nepal. In order to assertion, his impact, the researcher intends to answer the following problems.

- Does the mathematics achievement of CAS student differ from non-CAS student?
- Does the mathematics achievement of CAS students with respect to gender?
- What are the views towards CAS in mathematics learning achievement?

Objectives of the Study

This was proceed to investigate the impact of continuous assessment system at grade IV students. So this study was undertaken to attain the following objectives:

- To compare the mathematics achievement of CAS and non CAS students.
- To compare the mathematics achievement of CAS student with respect to gender.

- To analyze the views towards CAS in mathematics learning achievement?

Significance of Study

Mathematics has continuously development changes with changing needs of human being. So everyone needs the basic knowledge of mathematics to solve their daily life problem. Therefore mathematics is included in school curriculum from basic level of secondary level as compulsory subjects.

In a long period of student's evaluation a lot of defaults were found and to overcome those types of limitations of traditional evaluation system there is the CAS. So, mainly it works for the elimination of exam-phobia of the students is making them hopeless to express their knowledge in fixed plan and limited period. For instance here is two hours exam which is not practicable for the measurement of the level of knowledge attained during the whole academic year. For the part of educational quality and formative purpose the traditional assessment is not capable, neither it gives feedback to the students so that some remedial measure can be taken nor it helps to find the problems as a whole. So, CAS discourages students to be exam centered where as traditional assessment is encouraging to exam oriented to some extent. This all shows CAS is useful system not only for the summative purpose but also for the formative purpose so this study has following significance.

- It helps to explore the effectiveness of continuous assessment system in mathematics achievement which is more valuable thing for school administrators, teachers, students, researcher, curriculum designers and other stakeholders related to education.
- It helps to formulate the police and programs to reduce and other related problems.

- It helps to encourage the students for better achievement in mathematics.

Statement of the Hypothesis

The study attempted to seek the result of following research hypothesis and statistical hypothesis.

Research Hypothesis

- There is no significance different between the mathematics achievement score of CAS and non CAS student.
- There is no significance different between the mathematics achievement score of CAS students with respect to gender.

Statistical Hypothesis

- $H_0 : \mu_1 = \mu_2$

$$H_1 : \mu_1 > \mu_2$$

Where μ_1 and μ_2 are the mean achievement of CAS and Non-CAS students respectively.

- $H_0 : \mu_3 = \mu_4$

$$H_1 : \mu_3 > \mu_4$$

Where μ_3 and μ_4 are the mean achievement of boy and girl of CAS students with respectively.

Delimitation of the Study

It is concern with a binary area of the study. Due to various delimitations and resource constraint, is not possible to conduct the research on the large scale. Hence delimitation for this research was follows:

- The study was delimited within the geographical boundaries of Sunsari district.
- The study was delimited with only 200 students from Sunsari district.
- The study was delimited in grade IV students of public school.
- The standard achievement test was carried out in grade IV students.
- Extraneous variable was left freely and supposes to be equal impact on both groups.

Operational Definition of key Terms

Continuous Assessment System: Continuous Assessment System in such type of student evaluation, which can be carried out along with their teaching-learning activities.

Achievement: Achievement of this study is defined in terms of the scores obtained by the students on mathematics test constructed by the researcher.

CAS Student: Students of that school where CAS system are implementation.

Non- CAS student: Students of that school where CAS system are not implementation.

Public School: Public school is those which receive regular government logistic and financial support.

Impact: The force action of one object hitting another or a powerful affect that something, especially something new on a situation or person (Cambridge Dictionary).

Chapter II

REVEIEW OF LITERATURE

The review of related literature deals with the theories of research studies. Which have been concluded earlier? It helps to conduct the new research in a systematic manner. By proving the previous status of knowledge in the problem area and the general outline of the research study and avoid the unnecessary duplication. The review of related literature involves the identification analysis is document related to the study. Some theoretical concept previous studies different national documents as well as reports student's achievement in mathematics at grade four reviewed.

Empirical Review

The National Education Commission Reports, (1992) stressed the need to introduce comprehensive and regular evaluation scheme for proper judgment of student learning and for quality improvement in education. But it did not materialize. Six years later high level national education commission report (1998) blamed the existing examination system for creating the series educational wastage at the primary level was due to defective examination system. The commission stated "the main reason for student's dropout and class repetition has been the annual examination system".

Accordingly both the ninth plan (1997-2002) and the tenth plan (2002-2007) stated to introduce continuous assessment system for students. The plan targeted to experimentally implement the liberal promotion policy to upgrade from grade one to three. The tenth plan has programmed to introduce continuous assessment system up to grade five on the basic of piloted experiment and experience. It is clear from these

contexts that Ministry Of Government (MOES) is planning eventually to introduce CAS nationwide in primary education. As a preliminary stage to thus a piloting program was introduced in the districts Ilam, Chitwan, Syanja, Surkhet and Kanchanpur beginning in the school year 2057-2058 B.S. the piloting of CAS was first introduced with grade two and three.

In continuous assessment system, the evaluation of student learning does not depend only on exam scores. A scheme of evaluation as suggested by Ministry of education in Nepal, examination system was divided in two parts continuous evaluation and formal exam. Continuous evaluation covers 40% of the full marks and includes home work/class work (class participation), project work, behavior changes, creativity work and attendance. Formal exam covers 60% of the full marks and it includes only tri-monthly and annual test (CDC, 2068).

Bell (1999) did research on "Traditional assessment versus alternative assessment". The purpose of this study was to determine whether a teacher could use one type of assessment to evaluate student's abilities fairly. The question is whether or not alternative assessment strategies are necessary to meet student's individual needs. The research with 28 fifth graders compared their traditional and alternative reading and mathematics scores. Surveys were also distributed to 20 teachers and 100 students. The results indicate that the two years of testing cannot be compared a majority of the time, indicating a need for both types of assessment. The survey findings suggest that teachers and students are individuals who all need various types of assessment.

The primary education curriculum, 2063 stressed the need of continuous assessment for student's evaluation. The main aim of continuous assessment is to upgrade learning achievement of students who are involved in teaching activities in a school year by observing change in their behavior. For the students who remain

absent in a class and whose learning achievement are low can be upgrade as per for decision of the teacher, parents and head teachers for providing more learning opportunities. Pass marks is not determinant in grade 1 to 3 because continuous assessment is done in these grades.

Khanal (2008) did a research on "The effect of co-circular activities on mathematics achievement" studies the manipulative approach is particularly useful in helping students to receive insight into mathematical figures and properties. He concluded that the mean achievement scores of student's taught by using 'tiles' was higher than the mean achievement scores of student taught by without 'tiles' in the teaching algebra in grade six. Classroom, management also influence in students achievement.

Nepali (2012) carried out a research on "Challenges in implementing continuous assessment system". The main purpose of the study was to find out the teacher challenges on implementation of continuous assessment system. The sampling population of the study was 60 primary level teacher of the government aided school. He used purposive non random sampling procedure selected 20 government aided schools of Palpa district and 3 teachers from each school. He used open and close ended questionnaire for data collection. He found that CAS increased the attendance of the students and it minimized the number of failures through liberal promotion system etc.

Pandey (2016) did a research on "Impact of continuous assessment system on student achievement in mathematics" with objective to explore the comparison of and achievement of two groups the researcher collected the data about believes on CAS evaluation system and find out student achievement in the respect of CAS and non CAS. From the above finding the study, it concluded that CAS result significantly

better than the non CAS result. Similarly, it is also found that the achievement of CAS gives student is comparatively better than the CAS boy student. One the other hand there is a strong believes of students towards CAS. Hence, CAS evaluation system is more appropriate and better tools. So the researcher refers of impact CAS evaluation system for all school.

Bastola (2016) did a research on "Effectiveness of Continuous assessment system in mathematics learning at lower Secondary Level". The main purpose of the study was to find the overall mathematics achievement of CAS and non CAS student through learning process. The sampling population of the study were 300 students of these school. He used purposive non random sampling procedure selected 10 government school of Lamjung disttict. It is concluded that the continuous assessment is effective to the non continuous assessment system can contribute, if properly applied in improving students achievement is better for achievement improvement, decreasing students, irregularity and dropout scale.

Theoretical Review

The section is the most important part of research which consists of the following elements.

Introduction of Assessment. The literal meaning of the 'Assessment' is from the Latin word "assidere" which means "to sit beside". Sitting beside children suggest a close relationship and sharing of experiences. Now a day, the meaning of assessment is not limited as its literal meaning. Assessment is contract to that includes the full range of information teacher gather about their students, instruction and classroom climate. (Airasion, 1999)

Assessment is the process of finding out her extent to which the desired changes have taken place in the pupils. It therefore requires collection of evidence regarding growth or progress, so as to use that information for decision making, in this way, information gathering, judgment making and decision taking are the three phases of the process of assessment.

Types of Assessment

There are three types of assessment which are consisting the following

Diagnostic assessment. Diagnostic assessments are the process of assessing what students know and are able to demonstrate prior to instruction. This variety of assessment helps determine starting points and helps to teacher program appropriate for individual students. It is appropriately for individual students. It is verily used in determining the student's grade.

Formative assessment. Formative assessment is the process of assessing what students what and also to do so they progress through the learning and practice opportunities, this type of assessment provides ongoing meaningful feedback to help student's improve as the practical learning builds.

Summative assessment. Summative assessment is the process of assessing what students know and are able to do at certain points in the learning process. These assessments such as end of unit test and performance are used to determine the student's grade. (Altan, 2002).

Continuous Assessment System and its Use

According to Primary Curriculum Digidarsan (2057), Continuous assessment is a way of assessing pupils using a set of learning outcomes indicators. It refers to the daily process by which teachers gather information about learner's progress in

achieving the curriculum learning targets. It is continuous because it occurs regularly at different times as a part of instruction. Teachers can then use this information for formative purpose as an integral part of their teaching and for summative purpose as well.

The CAS (Continuous Assessment System) is a practice by which teachers manage their classes, adopt student centered techniques of teaching and assess students individually. The assessment of each individual student is based on his/her regularity, Participation and performance etc. by using variety of formal and non-formal tools of evaluation. Teachers evaluate student learning along with their teaching. Teachers evaluate student along with their teaching. Teachers use the assessment information for improving their teaching. Therefore, the CAS is merely a tool help teachers organize information about their students. It is then up to the teachers to use that information to vary their teaching and also to cater the needs of their individual students. It is not a system in which the teachers are busy with giving tests to the students frequently. But, at all times the teacher's needs to know for each of the students in the class how well they have understood. The ideas are being taught.

The philosophy of CAS is therefore a tool to assist teacher in implementation student centered active learning environment in the classroom. For this the teachers have to internalize the fact that no two students are alike, have the same capacity, or can learn with the same process and at the same place. Teachers can use CAS as an assessment tool for several purposes. They can use it to gain an insight in to each student's level. To diagnose what and how each students is learning, to group students, determine his\her own plan and instruct accordingly, to record the classroom performance of the students and to determine a effectiveness of his\her teaching learning activities. The basic principles of CAS are summarized as (CDC,2057)

- Teaching methodology is student centred not class based.
- All the learning outcomes of the curriculum are used the basis of the teaching and assessment of the students.
- The class teacher keeps the student progress record using a specific set of learning outcomes indicators.
- The class teacher assesses the students along with teaching on a continuous basis.
- There is no separate periodically examination.
- The student's progress records are kept in their portfolios.

Characteristics of CAS. CAS is non-formal in nature. In the system, student's evaluation is done in various timer and situation and appropriate medium and tools are used. Students writing reading and other activities are observed in the system. Similarly student's evaluation is done through written exam, oral question answer, interview and studying profiles. CAS is such kind of evaluation system in which evaluation is taken inseparable part of teaching activities and necessary instead of scheduled written exam. CAS especially emphasizes on formative evaluation system. This system is related with how to teach subject matter that the students could not learn their then taking decision for upgrading or not. In the system teacher should improve or change the teaching methods or techniques based on student's achievement. CAS assists weak students to enhance their achievement level. (CDC, 2056)

Objectives of the CAS. According to Continuous Assessment System, trainer manual (CDC, 2056) the objective of this continuous assessment system (CAS) programmed as follows.

- To evaluate student continuously using various mediums and tools.
- To make evaluation student centered and use it for effective teaching learning.
- To encourage brilliant students and assist weak students.
- To create favorable environment for regular attendance of students.
- To reduce dropout rate of student's due to teaching learning and failure in final examination in order to maximize the primary cycle completion rate.
- To minimize the stress of examination in students.
- To reduce class repetition rate.
- To launch liberal promotion policy through CAS.

Strategies of CAS in Nepal (Policies to Conduct CAS)

In the beginning of the program some strategies were developed and tried to implement the program effectively. Following were previous determined strategies of CAS in Nepal. According to Nirantar Bidhyarthi Mulyankan Karyanwayan Pustaka (CDC, 2068, p-2)

- To keep systematic educational record (portfolio) of students by compiling their model pieces of work.

- To introduce liberal promotion policy considering that students will achieve their learning outcomes in upper level which they had to achieve in the previous level.
- To implement grade teaching system in the first three grades where number of class is equal to the number of teacher.
- To co-ordinate CAS with early childhood development and recurrent teacher training program and to expand them.
- To launch CAS in some district as a piloting scheme present and expand it all over the kingdom within three years.
- To implement CAS from grade one to three only.
- To maintain teacher-student ratio 1:30 (manageable by teacher) in CAS implemented areas.
- To promote students with extra ordinary performance in the first trimester.
- To make school supervision more responsible.
- To integrate CAS with teacher training programs run by various institutions.

Continuous assessment is a method of evaluation the progress and achievement of students in education institutions. Its aims to get trust possible picture each of student ability at the same time helping each student to develop his or her abilities to the fullest. It is a method whereby the final grading of students takes account in a systematic way of whose performance during a given period of schooling. It indicates that the individual pupils would be seen assessed in totality. It also implies that the three 'H's-Head, heart and hand-relating to cognitive, effective

and psychomotor domain respectively, should be taken care of in the continuous assessment strategy (Osaji, 2009).

Effecting assessment strategies should promote students component and improve the quality of teaching. However, not all from are in equal accomplishing educational goals. Traditional approaches to assessment typically and standardized of teacher generated tests that focus and recall or recognition of knowledge on subjective and objective, multiple choice, matching and true- false question. As an alternative method of assessment, authentic assessment deemphasize rote learning and passive test taking in error of real world situation that push student's in the direction of more meaning full, authentic assessment deemphasize rote learning and passive test taking in error of real world situation that push student's in the direction of more meaningful, task relevant construction, integration and application of knowledge. Consequently authentic assessment is both direct and performance based, requiring students to demands trite proficiency by actually doing something in context that replicate the priorities and challenges faced in daily life. (Osaji, 2009).

Continuous assessment system is a package of concept and tools that contributes to the overall evaluation of the child. The Malawi's holistic approach in continuous assessment system included nine factors of teaching learning process.

They one,

- Uncovering the curriculum
- Pupil teacher relationship
- Class management
- Reporting to parents and Community
- Reporting to pupil

- Remediation and enrichment
- Taluar
- Assessment activities
- Pupil and teacher self assessment

Sources: (Malawi/IEQ, 2003)

The above nine factors in continuous assessment system, uncovering the curriculum means that teachers are not simply covering the curriculum to complete the term or year. Teacher are learning how pupils are performing become they are assessing periodically and teaching according to the pupils needs. They are uncovering the curriculum to see the need of pupils to be able to help than learn their own pace.

Pupils and teacher should develop a habit of self-assessment to improve their performance. Teacher was reflected on what they now. Understand and can do. We thought self assessment, would be an ideal way to include pupils in the assessment process, help them to understand to criteria for quality work, and help them think about how to learn.

In order to assess pupils on a one to one basis, other pupils have to be fully engaged in independent learning activities. This requires skill in classroom management, good lesson planning and preparing of pupils to be self- directed learners and work co-operative in groups. To strengthen teacher's skills in these areas we held several sessions on classroom management to help teachers group, enable pupils to work well in groups, developed classroom routine and prepare instruction for different groups of pupils.

Continuous assessment helps to improve the relationship between pupils and teachers because they are in an on-going conversation with one another. The teaching and learning process, therefore, become more transparent so that the relationship can improve.

Teaching and Learning using locally available resource (Talular) encourage teacher to be creative and resourceful in teaching and learning. So, teachers learn how to use local resources to implement teaching and assessment activities in the classroom.

Teacher conducts assessment activities periodically to understand how pupils are performing. Many Continuous assessments were conducted on a one to one basis with the teacher and pupil. This requires simple classroom management strategies that would keep the other pupils engaged in learning activities that help them perform at their best while pupil is being assessed.

Another factor of continuous assessment is using effecting remediation and enrichment techniques. When teachers understand how their student are performing they are know how to direct their teaching. Teachers were learning how to teach to the multiple levels of knowledge, skill and application that all pupils are learning. Continuous assessment is very empowering for students because they can understand how they are performing in their subjects. Student's are assessed they are received immediate feedback from the teacher so that they know what areas they need to work on for the next time they are assessed.

Teachers are able to effectively communicate with parents because they are knowledge of how students are performing through are records they have for each students.

These concept and specific activities work together holistically to create a mechanism of consulting with students, parents and teachers. They are able to discuss about the student learning because teacher now what the student has learned through periodic assessment. This enables the teacher to more effectively direct his/her teaching so that the student can understand concept that may not have been fully mastered. Not only is the teacher able to facilities the student's learning through the better teaching, but the student can also become more self directed is learning because the student knows in which area he/she need to improve. As teacher and student's begin to discuss more about students learning, parents will also become more involved in their students and especially between students and parents.

Folayajo (1997) states that continuous assessment is a system of assessment which is carried out at predetermined intervals, usually coincide with some identifiable units of instruction or level of education system, for the purpose of monitoring the progress or otherwise of students and the general performance of education system. In definition includes the monitoring of student, learning with a view to improvement their performance and helping them in the area of deficiencies as a way of insuring assess at formative test are developed and administered to the pupils after a unit a lesson and remediation given in areas of identified difficulties before the next unit taken up. Bajah (1984) views continuous assessment are continuous updating of judgment about performance in relation to specific criteria which will allow a commutative judgment to be made about performance upon these some criteria at any time.

In this study the researcher focused on holistic approach in continuous assessment. Continuous assessment is more than judging the student's performance, a learning process between teacher pupils and parents. It is also holistic process that hot

only the brings together multiple stakeholders but also integrates assessment and teaching as interconnected activities that are intergraded to the child's learning. Specifically, Continuous and collecting information periodically to find out what a student knows understand and can do. Thus is determined through ongoing and fair assessment of all pupils in a class. The activities in continuous assessment are many and varied to speak to pupil's different learning style and level of mastery of concept. Good continuous assessment therefore will provide all children with opportunities to perform at their best and to learn at their own place.

These concepts and specific work together holistically to create a mechanisms of consulting with students, parents and teachers. They are able to discuss about the student learning because teachers know what the student's learning because teachers know what the student has learned through periodic assessment. This enables the teachers to more effectively direct his/her teaching so that the student can understand concept that may not have been fully mastered. Not only is teachers able to facilitate, but the student can also become more self-directed is learning because the student knows in which are he\she need to improve. As a teacher and student's 'begin to discuss more about student's learning, parents will also become more involved in their student and especially between students and parents.

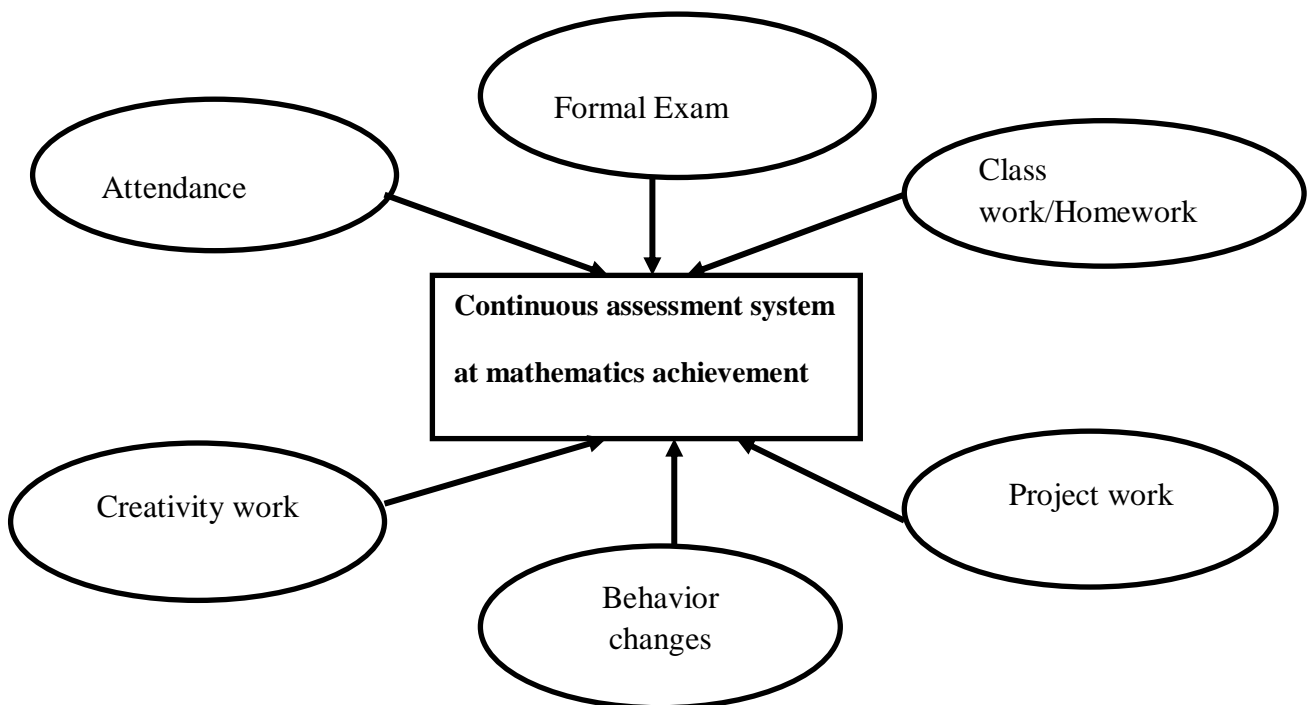
Research Gap

The previous researchers which are conducted are mainly concerned with the topic likes, "Impact of the continuous assessment system on mathematics achievement at grade four". These researchers focused on the "achievement aspect" of CAS and the research objective are not directly co-relate with ministry of education (MOE) polices of CAS. Most of the schools and teacher have not implemented CAS effectively. So this research is different in the same that, it has focused on the problem of CAS which

are faced by schools and teachers, way of effective implementation useful technique of CAS and this research tries to correlate its objective with MOE police of CAS.

Conceptual Framework of the Study

The conceptual framework is the representation, either graphically or narrative form, of the main concept or variable and the relationship of the in dependent various with dependent variable. This study involves the main six techniques of assessing student's performance formal exam class work homework, project work, behavior changes creativity work and attendance. In the Nepalese context continuous student evaluation implementation book 2008 (MOE-NEPAL) defined the above six factor influence the continuous assessment. The relationship of these factors with continuous assessments is shown in the following figure.



Sources :- (MOE, 2008)

MOE (2008) Continuous student evaluation implementation book 2008, Nepal. All teachers are familiar with written techniques as it is the most commonly used techniques for evaluation students pronged. This is used for unit test, class test, term test, half yearly test and annual examination as the assessment component. In this type examination are considered as relevant measure to be used in continuous assessment in Nepalese context. Class work, home work and assignment involving written work can be used to assess student writing ability and practice of mathematical problem project work means this type of activities related to the individual and group work. Assessment of student learning can be done group collaboration and co-operation work as well as individual performance student also presents their own project work in the whole class. So, presentation skill is also developing thought project activities. Behavior change through the continuous evaluation is the outcomes expected in students. This change seen in behavior can be measured internal and external observation of student's activities in school and learning attitudes. Regularity in the class is an important measure in continuous assessment. Creativity work is also teaching and is used as one measure of continuous assessment. Regularity participation in program in the class and school is important measure of CAS. Attendance is one of the most important parts of student's assessment. If the classes they cannot attain in the class they can not involve in all activities consequently back in mathematics knowledge.

Chapter III

METHODS AND PROCEDURE

This chapter describe the methodology adopted in this research under following sub-heading includes research designed of the study, population of the study, sample of the study, data collection procedure, data analysis procedure.

Design of the Study

This study was designed as survey type, which involved administration of achievement test for two different groups of grade four students of academic year 2073 B.S. the main purpose of the study was determined the impact of the continuous assessments system on student's achievement in mathematics at grade four. For the sake of impact of CAS to be observed between two groups (CAS and Non-CAS) in a such a way that one another consisting students of grade four who were evaluated in a non CAS approach. The first (CAS) group was taken from the school and second (non-CAS) group was taken from the school. Both groups were taken from public school of Sunsari district.

The same achievement test items were given to both groups. The administrated test item was developed almost completely on the basis and being within the criteria of class wise and subject wise learning outcomes indicates bu Curriculum Development Center, Nepal shown in Appendix-‘E’. The common test was administrated to both CAS and non CAS group of the curriculum of class IV.

Population of the Study

All the students of grade four of public school of Sunsari district were the population of this study.

Sample of the Study

To fulfill of the objectives of this study the researcher was selected 20 public schools from Sunsari district. Among the 10 schools were CAS and 10 schools were non-CAS, 200 students of these schools were selected for the purposive of this study. Which are shown on Appendix -'A' and Appendix- 'B' respectively. To fulfill the third objective of the study the researcher selected 20 government teacher and head teacher of this school from this school from sunsari district. For sampling of data students, schools and teacher were non probability random sampling procedure, even in the area of the school from each district. The researchers used purposive sampling, i.e. selected on the basic of accessibility.

Data Collection Tool

Since the purpose of the study is to examine the impact of continuous assessment system as an evaluation procedure against non-CAS procedure. The tool of the study was achievement test, class observation and interview which are below.

Achievement test. An achievement test prepared by the researcher was the main tool for the data collection of the study. The researcher prepared mathematical achievement test paper on the basis of learning outcomes as mentioned in grade IV curriculums. The test by pilot study.

Observation. In the experimental period, the researcher made focus group and collected information and also researcher had noted student participation, regularity, home work, interaction.

Interview. To fulfill the required objective. The researcher will prepare interview schedule. The researchers will take interview about the mathematics subject teacher and head teacher.

Item Analysis, Reliability and Validity of Tools

The content validity of the test was approved from the mathematics education expert and school teachers. For the reliability of the test, researcher conducted pilot study. The fourteen students of Shree Ramdhani Higher Secondary School, Lalpur, Sunsari were used for pilot study of the achievement test. Before administrating the test paper, the researcher instructed the students how to respond on the test paper. It was provided of pilot study was acquaint with the field situation of test administration and train them. Following the pilot study difficulty and discrimination values for any item

We are calculated and these items, which demonstrated describe level, were included in the test. To finalize the item of the test, item Analysis chart of the developed shown in Appendix- 'D', difficulty level and the discriminations of each item was calculated from 27% of higher score i.e. 7 students of higher and 27 % of lower score i.e.7 students of lower score. Also to find the reliability of the achievement test, the researcher used split, half method and found it indicated that test was reliable shown in Appendix – ' D '

Difficulty level (P): It is the percentage of students able to pass each item. It takes the value ranging 0 to 100. The 'P' value of each item was calculated by the formula:

$$P = \frac{R}{T} \times 100\%$$

Where,

P= Item difficulty level

R= Number of students who give correct answer

T= Total number of the students appeared in the test.

The criteria for analysis of item difficulty level are follows:

Table No. 1

Criteria	Item Evaluation	No. of Items	Remarks
Above 80%	Easy	4	Need improvement
20%-80%	Good	30	Accepted
Below 20%	Difficult	1	Need improvement or reject

Discrimination Index (D): It ranges of -1 to +1 is denoted by 'D' and is given by the formula.

$$D = \frac{R_U - R_L}{\frac{T}{2}}$$

Where,

D= Index of discrimination.

R_U= Number of upper 27% students who give correct answer.

R_L= Number of lower 27% students who give correct answer.

The criteria for all analysis of Item Discrimination Index are as follows.

Table No. 2

Criteria	Item evaluation	No .of Items	Remarks
0.04 and above	Very Good	20	Accepted
0.30-0.39	Good	1	Accepted
0.20-0.19	General	9	Accepted
0.00-0.29	Negligible	4	modified
0.00-0.19	Poor	1	Need Improvement

Furthermore, the reliability of the test calculated in split-half reliability by personal's correlation formula.

It was found to be 0.97 which is given in Appendix- ' D' so the test item is reliable (Best and khan, 2010 p. 384-388).

The test was refund by canceling and modifying some of the items. Table of item analysis determined the level of difficulty (P) and power discrimination of each item in the instrument. The item those having D level above 0.20 and p-value (25-75%) were accepted. The items those having D-value less than 0.20 were canceller.

Item no 2, 7, 11, 13,20,28,29 and 35 were cancelled and item no. 10 was modified shown in Appendix- ' C '. Thus the refined instruments of achievement test included only 27 standardized items in the achievement test as shown in Appendix- 'E'.

Data Collection Procedure

We myself visited each the sample schools of Sunsari district and administrated the achievement test to collected data. Well instruction in a conductive environment of the classroom was provided before administration the achievement

test. This was all for the students and they are responsible for questions to finish correctly and through fully.

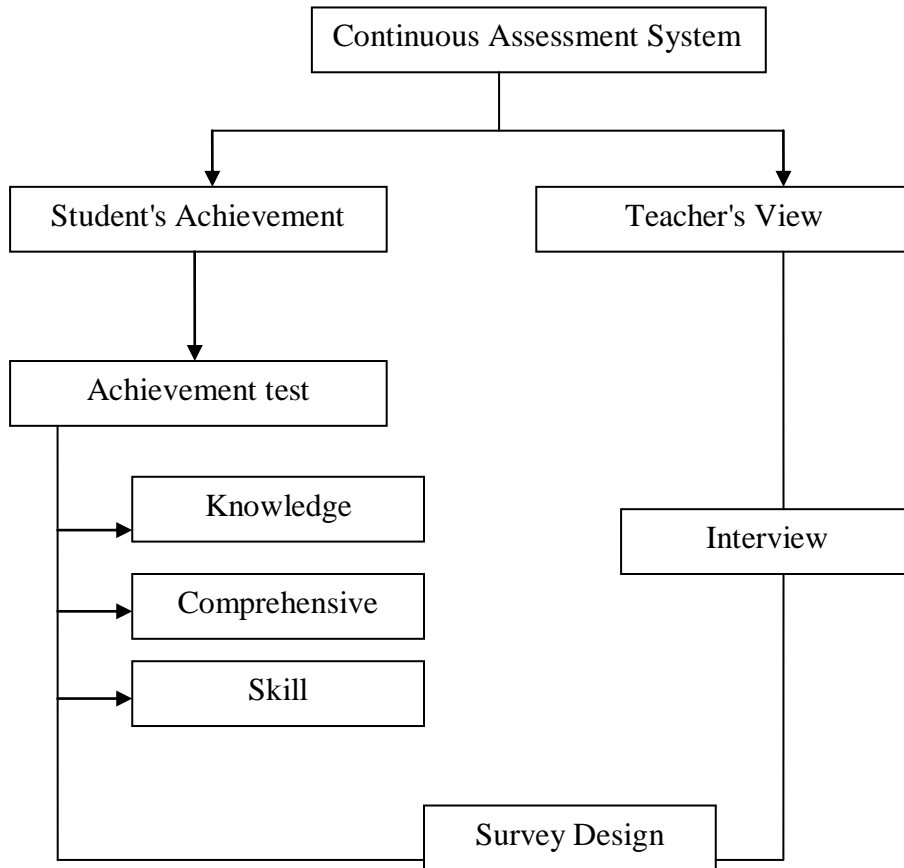
After setting down all the pre-adjustment and management in co-ordination with the school family and the head teacher, the researcher himself administrated the standardized achievement test of sampled students of the selected school to observe the achievement level. The score obtained by the student of both types of sample school was used in analysis and interpretation.

Data Analysis Procedure

The researcher visited the selected school which were implemented by CAS and implements by non-CAS of district and then conduct the achievement test of those groups. The analysis of data is descriptive. The analysis of data is description. The collected information category of the respondents and then different themes were given in the text of interview of subject teacher and head teacher and observation. The achievement score of two groups analyzed by using mean, standard deviation and t-test of the comparison between CAS are non CAS students.

The mean standard deviation and t-test were used in analysis of achievement score of students. All the hypothesis were tested at 0.05 level of significance i.e. = 95% level of confidence.

The researcher have prepared procedural framework of the study as follows:



Chapter IV

ANALYSIS AND INTERPRETATION OF DATA

In this chapter, the analysis and interpretation are followed in a systematic manner. Data analysis is considered to be important step and heart of the research in research work. Analysis of data is a forced of inspecting, cleaning, transferring and modeling data with the goal of highlighting useful of information, suggestion, conclusion and supporting decision making (Best and Khan, 2010). The data are collected to fulfill the objectives of the study the data from open ended questions. Interviews and observation were illustrated and describes in weeds where as a quantitative data analyzed by the support of Microsoft Excel. In the process of analyzing the collected data and their interpretation, several descriptive statistical device and inferential device. Test of significance (t-test) have been used in this study. To make the presentation comprehensive and inked the subdivisions with suitable adequate numbers are constructed to make the interpretation. The data are organize and tabulated as below.

Comparison Between Mathematics Achievement of CAS and Non- CAS Student

The mean, standard deviation and corresponding t-value of the mean score obtained by students of CAS and Non-CAS groups are presenting in table

Table 3

Comparison of the Mean Score of CAS and Non-CAS Students

Group	No. of Students	Mean	S.D	T-value	Conclusion
CAS-Student	100	17.87	3.63	5.94	Significant
Non-CAS Student	100	14.93	3.37		

Region of rejection $t \leq -1.96$ or $t \geq 1.96$ df 198 at 0.05 level

The above table shows that the mean scores of CAS student and non-CAS students are 17.87 and 14.93 respectively. It gives the mean difference CAS and non-CAS student is 2.94. The standard deviation of CAS and non-CAS students is 3.63 and 3.37 respectively obtained t value is 5.94 which is greater than tabulated t value, 1.96 at 0.05 level of significance. Thus the null hypothesis is rejected and concluded that there is significant difference between the achievement of CAS student and non CAS student. It also revealed that the average the schools implemented CAS has better achievement than the students which school does not implement CAS. Thus it can be concluded that the school which has implement CAS for evaluation has better than that of school which did not implement it. The above measure shows that continuous assessment system is one of the comparatively better evaluation processes for improvement student's learning achievement.

Comparison Between Mathematics Achievement of CAS Boy Student and CAS Girl Student

The mean, standard deviation and corresponding t-value of the score obtained by students of CAS groups are presented in table-2

Table 4

Comparison Between Mathematics Achievement of CAS Boy Student and CAS Girl Student

Group	No. of Student	Mean	S.D.	t-value	Conclusion
CAS Boy	50	17.90	3.30	0.22	Insignificant
CAS Girl	50	17.74	3.83		

Region of rejection $t \leq -1.96$ or $t \geq 1.96$ df 98 at 0.05 level

The above table shows that the mean score of CAS boy student and CAS girl student is 17.90 and 17.74 respectively. That gives the mean difference of these two groups is 0.16. That means that the mean score of CAS boy student is higher than mean score of CAS girl student. The standard deviation of CAS boy student and CAS girl student is 3.3 and 3.83 respectively. The obtained t value is 0.22 which is smaller than given table t- value $t_{0.05, 98} = 1.96$. Thus the null hypothesis that there is no difference in the mean achievement of CAS boy student and CAS girl student is accepted. Hence it is concluded that the mean difference 0.22 is statically insignificant.

Teacher's View on the Implementation of CAS

The fourth objective of this study was to analyze the "Impact of continuous assessment system at student's achievement in mathematics achievement at grade four". In order to accomplish this objective the researcher took interview of mathematics teacher and head teachers.

After analyzing the quantitative data, the achievement of CAS students was found better than the non-CAS student. Regarding this, the researcher was also interested to find out to analyze the views towards CAS in mathematics learning achievement. The researcher took interview with the mathematics teacher and head-teacher on the basis of problem faced in implementing CAS (Appendix-' F '). They expressed the similar answers.

The first question "*What differences in student's achieving did you find before and after CAS implemented?*" Was asked they told that traditional evaluation system only focused on passes or fail in exam of students. But continuous assessment system is based on improving the students, learning, behavior change and good achievement. It is based in communicative approach.

The second question was "*What difference did you find between traditional evaluation system and continuous assessment system?*" they told the before CAS, traditional system is old teaching system it focused on teacher centroid, descriptive method, students were passive. But CAS student were active, regular attendance in school, Do the class work, homework and creative work and they have good marks in mathematics.

The third question "*Why is CAS and non CAS girl student's achievement insignificantly different?*" They told that it may be the factor of negligence to girls at home and they have to be busy for house work and irregular in school so not better achievement. But CAS girl at regular in school, regular do the homework, class work, regular attained in the extra activities program, so the CAS girl student is better achievement then non CAS girl students.

The fourth questions " *Why CAS students have better achievement in mathematics than non-CAS student?*" they told that CAS student have better achievement in mathematics than non CAS student. The students are evaluated on the basic work, class work, homework, creativity work, question answer and regular attendance, extra activities. Then non CAS evaluated to use old method, teacher centred activities, not use materials, exam and pass oriented teaching learning activities. So, the many difference between the CAS and non CAS student achievement.

At fifth question "*What challenges do mathematics teachers and school administrator or face while implementing CAS?*" Was asked they told have many challenges do mathematics teacher and school administrator or face while implementing CAS. Financial problem to purchase instrument, problem on daily evaluation because of overloading of teacher, problem for making the instrument, tools evaluation, preparing the lesson plan, consuming teaching time because teacher were busy to fill the form, Ministry of education and District Education Office should not play the facilities role and provide expert and organize many training, program for the teacher to increase the efficiency.

The High Level National Education Commission Report (1998) blamed the existing examination system for creating the serious education system for creating the serious educational wastage at the primary level was due to defective examination system. The commission stated, "The main reason for student's drop- out and class repetition has been the annual examination system".

Continuous assessment system helps in developing student's logical and creative thinking abilities. Students work in group and individually, explore and investigation of the mathematics problem and they construct, compare and justify the

mathematics concept. Only the period of implementing continuous assessment, all the above method activities were performed well. Manipulative materials helped them and challenged to find alternative solution. It helps them to communicate their thinking in mathematics knowledge while using continuous evaluation. The students deeply enjoyed and found more interested to learn mathematics concepts by using different method daily and weekly observation, extra activities, project work, working with group, presentation and interacting with student and teacher. Also developed the behavior of student's such as; carrying out the assignment, helping others, participation in class activities and creativity.

It was the high risk and challenges for the teacher as well as school management to implementing CAS. For the teachers the challenges to make one self prepared on planning the course contents, preparing project task, different forms, organizing different curricular activities etc. School management committee has to manage the teacher training and required to conduct the continuous evaluation system (Acharya, S.K., 2013: P: 52).

Above interview show that CAS is very effective than traditional student's evaluation system. But it is important to encourage girls in active participation and enough time should be given at home to do class work, project work and home work and regular in school. Also it is important to provide training to the teacher class period should be extended, student centroid, regular teaching in class. The head master should be encouraging teachers to use CAS. Sufficient financial support from government should be given for CAS implementation to schools. Ministry of Government and District Education Office should play the facilities role and provide exports and organize many teacher professional training programs for the teacher to increase the efficiency of them.

Chapter V

SUMMARY, FINDINGS, CONCLUSION AND RECOMMENDATION

This study was designed as survey type. The purpose of this study was to test the impact of continuous assessment system on mathematics achievement at grade four. The score obtained in the test was the data for this study. The researcher analyzed the data and obtained the findings. These chapters deals with the result of the study, impact of continuous assessment system in mathematics achievement and also presenting the summary, Finding, conclusion and recommendation.

Summary

"Impact of continuous assessment system on mathematics achievement at grade four" Stated researcher topic had following objective which were selected.

- To compare the mathematics achievement of CAS and non CAS students.
- To compare the mathematics achievement of CAS student's with respect to gender.
- To analyze the teacher's views towards CAS in mathematics achievement.

The researcher constructed an achievement test for the grade IV students in the mathematics on the basis of mathematics curriculum and administrated in IV schools from Sunsari district among 200 students. Similarly 100 students are CAS students and 100 students are non CAS students. The research tool of this study was the achievement test and interview. The researcher standardized the achievement test with the help of pilot study in Ramdhuni higher secondary school. Lalpur, Sunsari.

The final achievement test contained 27 items on four levels (knowledge, computational, skill and application) of the cognitive domain. The test was

administrated on sample students. Among the other statically measure t-test was applied in order to compare the mean of post test score between CAS and non-CAS groups. The data was analyzed and interpreted statistically and also interview with head teacher and subject teacher to find the conclusion.

Findings

The researcher had got the following findings.

- There was significant difference between mathematics achievement of CAS students and non-CAS students.
- There was insignificant difference between mathematics achievement of boy CAS students and girl CAS students.
- According to interview with head-teacher and mathematics teacher, it was found that CAS achievement is more effective assessment system for students in mathematics but there are many problems to implement CAS.
- The result of this study is on the favor of CAS groups i.e. the performance of CAS group is better over non CAS group and it has positive effect of using Continuous Assessment System in mathematics class.
- According to the head teacher and class teacher of the school, the CAS system is being useless and meaningless due to education structure and system in Nepal, lack of monitoring and evaluation system and lack of professional teacher training; through it has positive aspects on teaching and learning.
- It is being useless due to various factors as lack of teaching aids and materials, physical structure of Nepal and lack of modern technology equipment as well.

Conclusion

Form the above finding of the study it is concluded that CAS result is significantly better than the Non-CAS result. It is also found that achievement of CAS gives student is comparatively equally to the CAS boys and CAS girl. CAS evaluation system is more effective and better tools.

It is concluded that the continuous assessment system is effective to the Non-continuous assessment system in mathematics. Continuous Assessment System can contribute, if properly applied, in improving student's achievement scores. Furthermore, Continuous assessment is better for achievement improvement, decreasing student's irregularity and dropout scale. In the context of Nepal, Continuous evaluation system is not practiced seriously in government schools. On the basis of result, of can be concluded that when continuous assessment is practiced in school level.

Recommendations

On the basis of finding in this study, the following recommendations are suggested:

- This study shows that the result of CAS is not seen effective even if it has many examples with good result around the world. So it is recommended the world. So it is recommended to investigate the factor hindering and try to eradicate to much as possible.
- Continuous Assessment system should be made compulsory in school level Student's evaluation with necessary hands on training.

- MOE and DEO should play the facilities role and provide experts and organize many training, programs for the teacher to increase the efficiency of them.
- The headmaster should encourage teacher to use continuous assessment system.
- Regular classroom observation from school supervisor or from school's head teacher should be done. Teacher can get fruitful feedback from observation for betterment.

Recommendation for the Further Study

The following study should be carried out in order to make the results of the study complete.

- How the continuous forms of assessment are used in so called effective school in Nepal.
- What are barriers are in using continuous assessment while teaching mathematics in basic level.
- The study can be extended in other subjects as well.
- The study can be done compare another district of CAS and non CAS.

Education Implication of this study

The following implications have been suggested to the concerning stakeholder different levels.

- To implement CAS well, there should be balanced responsibility in the teacher students and parents.

- School Management committee and teacher parents association should be play positive role in CAS.
- Sufficient training on CAS should be given to primary teacher.
- Teacher should be more laborious and engaged to implement CAS

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Appendix A

Students from Sampled Schools

S.N.	Boy CAS Students	Marks Obtained	S.N.	Girl CAS Students	Marks Obtained
1.	Prayas Chaudhary	16	1.	Purnima B.K.	18
2.	Dhiraj Uraw	18	2.	Bhumika Maji	19
3.	Samyog Maji	20	3.	Asmita Uraw	18
4.	Binod Uraw	18	4.	Purnima Maji	18
5.	Manoj B.K.	18	5.	Karuna Chaudhary	19
6.	Sagar Uraw	16	6.	Ranjita Uraw	18
7.	Saugal Maji	22	7.	Smita B.K.	14
8.	Sankar Kunwar	19	8.	Tara Karki	23
9.	Laxman Maji	20	9.	RupaUraw	24
10.	Bibek Basnet	16	10.	Puspa Uraw	22
11.	Rakki Chaudhary	22	11.	Nilam K. Mehata	15
12.	Jyotis Chaudhary	18	12.	Kritika Basnet	14
13.	Dilkumar Sarki	21	13.	Rita K. Uraw	17
14.	Anil Mehata	16	14.	Alisha Karki	16
15.	Yonjan Maji	18	15.	Deepa Bista	19
16.	Kalas Chaudhary	16	16.	Bipina Karki	19
17.	Arjun Giri	12	17.	Akata Niroula	16
18.	Deeplung Rai	12	18.	Sristhi Chaudhary	15
19.	Sanjaya B.K.	19	19.	Asma Pariyar	18
20.	Bibash Thapa	16	20.	Nitisha Chaudhary	12

21.	Karan Sarda	17	21.	Prasna Tamang	16
22.	Sudip Basnet	18	22.	Apasana Bhattarai	14
23.	Biran Uraw	21	23.	Chadani Mehata	25
24.	Avaya Rai	21	24.	Tara Karki	18
25.	Prakash Thapa	23	25.	Kalas Chaudhary	16
26.	Arjun Bhattarai	23	26.	Sandya Gupta	18
27.	Dil Kumar Sarki	21	27.	Kritika Basnet	21
28.	Binod Uraw	22	28.	Rejina Dahal	21
29.	Yonjan Maji	16	29.	Kunta Dhakal	23
30.	ArjunGiri	14	30.	Gita Pyakurel	20
31.	Dhiraj Uraw	18	31.	Sapana Poudel	18
32.	Keshan Giri	21	32.	Rupa Ranamagar	22
33.	Sagar Thapa	22	33.	Sudhana Pokhrel	18
34.	Govinda Gautam	18	34.	Asmi Poudel	18
35.	Ashok Rai	17	35.	Ambika Bastola	18
36.	Lalit Rai	17	36.	Unisha Thapa	19
37.	Subash Limbu	22	37.	Abina Dhakal	16
38.	Sudip Pakhrin	18	38.	Vhisma Mayan	14
39.	Anil Dahal	17	39.	Srijana Adhikari	12
40.	Sanjay Bhujel	13	40.	Rekha Chuahdary	13
41.	Pasang Sherpa	13	41.	Alina Chaudhary	15
42.	Bijaya Karna	16	42.	BinitaYadav	16
43.	Bipul Chaudhary	12	43.	Uma Bhujel	10
44.	Suman Parajuli	21	44.	Nisha Darnal	8

45.	Anurag Adhikari	10	45.	Puja Maden	13
46.	Sanjeep Dhungel	21	46.	Srijana K.C.	22
47.	Bibek Tamang	13	47.	Pratima Kattel	16
48.	Bijaya Khadka	16	48.	Sumitra Koirala	26
49.	Rupesh Chaudhary	24	49.	Archan Bhattarai	24
50.	Sanotsh Shah	17	50.	Smarika Uraw	22

Appendix B

Students from Sampled Schools

S.N.	Boy Non-CAS Students	Marks Obtained	S.N.	Girl Non-CAS Students	Marks Obtained
1.	Puse Kumar Uraw	17	1.	Sisam K. Chaudhary	14
2.	Suwan Kumar Chaudhary	16	2.	Aabigya K. Chaudhary	15
3.	Samir Chaudhary	18	3.	Samikshya K. Chaudhary	12
4.	Raman Kumar Chaudhary	17	4.	Aakriti K. Chaudhary	16
5.	Sudeep Rijal	15	5.	Prasna Chaudhary	9
6.	Avaya Rai	21	6.	Susmita Pariyar	16
7.	Dibas Chaudhary	18	7.	Anshu Chaudhary	11
8.	Prayas Chaudhary	21	8.	Jharna Limbu	20
9.	Simran Chaudhary	14	9.	Rojina Niroula	20
10.	Aaditya Chaudhary	16	10.	Salina Chaudhary	20
11.	Biren Uraw	20	11.	Prasna Tamang	16
12.	Prakash Thapa	17	12.	Apsana Bhattarai	16
13.	Arjun Bhattari	22	13.	Maya B.K.	17
14.	Deepak Chaudhary	15	14.	Muna Yadav	13
15.	Manoj Gupta	14	15.	Susana Uraw	8
16.	ArpanYadav	12	16.	Anju Nepali	11
17.	Manish Badhi	11	17.	Hema Guragain	18

18.	Binod Horijon	11	18.	Kritika Chaudhary	15
19.	Siva Tamang	17	19.	Sabina Niroula	16
20.	Avaya Shrestha	15	20.	Manira Shah	12
21.	Sanjay Chaudhary	17	21.	Kalpana Khadka	9
22.	Kamal Biswas	19	22.	Sita Karki	11
23.	Mani Khatiwada	18	23.	Parbati Tamang	13
24.	Shyam Poudel	17	24.	Rita Limbu	11
25.	Sanjay Acharya	13	25.	Pabitra Gurung	10
26.	Khem Magar	21	26.	Anju Pakhrin	19
27.	KeshabSapkota	21	27.	Sabitra RanaMagar	18
28.	BijayRai	23	28.	Bhima Uraw	17
29.	Sudesh Rai	14	29.	Laxmi Ghale	12
30.	Ashok Chaudhary	11	30.	Anita Maden	11
31.	Raju Oja	15	31.	Sapana Magar	17
32.	Ram Prasad Chaudhary	16	32.	Sireesa Ghimire	11
33.	Hari Parajuli	17	33.	Asmita Kunwar	15
34.	Deelip Khaling Rai	16	34.	Binisha Dhamala	16
35.	Anup Regmi	11	35.	Sunnima Limbu	17
36.	Manoj Maji	12	36.	Alaka Raut	17
37.	Kiran Uraw	13	37.	Anju Regmi	18
38.	Bibek Chalise	11	38.	Nitisha Pradhan	14
39.	Subash Adhikari	18	39.	Madhu Thapa	11
40.	Ekraj Parajuli	19	40.	Bimala B.K.	12

41.	Bishnu Chaudhary	13	41.	Simple Karki	13
42.	Sanotsh Bahandari	12	42.	Devika Tamang	16
43.	Binod Uraw	8	43.	Sittal Acharya	16
44.	Khagendra Gautam	11	44.	Sastika Gautam	9
45.	Ganesh Karki	13	45.	Bipisha Acharya	11
46.	Rupesh Sharma	14	46.	Rachana Shrestha	12
47.	Sandesh Dhungel	15	47.	Sangita B.K.	13
48.	Arun Ale Magar	16	48.	Srijana Dahal	16
49.	Tritha Basnet	18	49.	Asha Chaudhary	17
50.	Sunil Puri	11	50.	Lila Uraw	19

Appendix C

Item Analysis of the Test

Students Item	Upper 27%							Lower 27%							P%	D	Remark
	1	2	3	4	5	6	7	8	9	10	11	12	13	14			
1.	1	1	1	1	0	1	1	1	0	1	1	1	0	0	71.4	0.29	
2.	1	1	1	1	1	1	1	1	1	1	0	1	1	0	78.6	0.14	Cancelled
3.	0	1	1	1	1	1	1	0	1	0	0	1	1	1	71.4	0.29	
4.	1	1	1	1	1	1	1	0	0	0	0	0	0	0	50.0	1	
5.	1	1	1	1	1	1	1	0	0	0	0	1	0	1	64.3	0.71	
6.	1	1	1	1	1	1	1	0	0	1	0	0	1	0	64.3	0.71	
7.	1	0	1	1	0	1	0	0	1	1	1	1	0	1	64.3	-0.14	Cancelled
8.	1	0	1	1	0	1	1	0	1	0	0	0	0	0	42.9	0.57	
9.	1	1	1	1	0	0	0	0	0	0	1	0	0	0	35.7	0.43	
10.	1	1	1	1	1	1	1	1	1	1	1	0	0	0	78.6	0.43	Modified
11.	0	0	0	0	0	0	1	1	0	0	0	0	0	0	14.3	0	Cancelled
12.	1	1	0	0	1	1	1	0	0	0	1	0	0	0	42.9	0.57	
13.	1	0	1	0	1	1	0	0	0	0	0	1	1	1	50.0	0.14	Cancelled

14.	1	1	1	1	1	1	1	1	1	1	0	0	1	0	0	71.4	0.57	
15.	1	1	0	1	1	0	1	0	0	1	1	1	0	0	57.1	0.29		
16.	1	1	1	1	1	1	1	0	0	1	0	1	0	1	71.4	0.57		
17.	0	1	0	1	1	1	0	0	0	1	0	0	1	0	42.9	0.29		
18.	1	1	1	1	1	0	0	0	0	1	0	1	1	0	57.1	0.29		
19.	1	1	1	1	1	0	1	0	0	1	1	0	1	1	71.4	0.29		
20.	1	1	1	1	1	1	1	0	1	1	1	0	1	1	85.7	0.29	Cancelled	
21.	1	1	1	0	1	0	1	0	1	0	0	0	0	1	57.1	0.57		
22.	1	1	1	0	1	0	1	0	1	0	1	0	1	0	64.3	0.43		
23.	1	1	1	1	1	1	1	1	0	0	1	0	1	0	71.4	0.57		
24.	1	1	1	0	1	0	1	0	0	0	0	1	0	0	50.0	0.71		
25.	1	1	1	0	1	0	1	1	0	0	1	0	1	1	71.4	0.29		
26.	1	1	1	1	1	1	1	0	0	0	1	0	0	1	64.3	0.71		
27.	1	1	1	1	0	1	0	0	1	0	0	0	1	0	50.0	0.43		
28.	1	1	1	1	1	1	1	0	1	0	0	1	1	1	78.6	0.43	Cancelled	
29.	1	1	0	1	0	0	0	0	0	0	0	0	0	1	28.6	0.29	Cancelled	
30.	1	1	1	1	1	1	0	0	1	0	1	0	1	1	71.4	0.29		

31.	1	1	1	1	1	0	1	1	0	1	0	0	0	0	57.1	0.57	
32.	1	0	1	1	1	0	1	0	0	0	0	1	0	1	50.0	0.43	
33.	1	1	0	1	0	1	1	0	0	1	0	0	0	0	42.9	0.57	
34.	0	1	0	1	1	1	1	1	0	0	0	1	0	0	50.0	0.43	
35.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	100	0	Cancelled
	31	30	28	28	27	27	27	10	13	14	14	15	15	15			

Appendix D

Split-Half Reliability of the Test

Students	Odd (X)	Even (Y)	XY	X ²	Y ²
1	15	16	240	225	256
2	15	15	225	225	225
3	13	15	195	169	225
4	14	14	196	196	196
5	12	15	180	144	225
6	11	16	176	121	256
7	12	15	180	144	225
8	9	6	54	81	36
9	8	7	56	64	49
10	7	8	76	56	64
11	8	6	48	64	36
12	8	6	48	64	36
13	5	8	40	25	64
14	6	4	24	36	16
N = 14	$\sum X = 143$	$\sum Y = 151$	$\sum XY = 1738$	$\sum X^2 = 1614$	$\sum Y^2 = 1909$

Reliability of Split-Half Test

$$\begin{aligned}
 r_{xy} &= \frac{N\sum XY - \sum X\sum Y}{\sqrt{N\sum X^2 - (\sum X)^2} \sqrt{N\sum Y^2 - (\sum Y)^2}} \\
 &= \frac{14 \times 1738 - 143 \times 151}{\sqrt{14 \times 1614 - (143)^2} \sqrt{14 \times 1909 - (151)^2}} \\
 &= \frac{24332 - 21593}{\sqrt{22596 - 20449} \sqrt{26726 - 22801}}
 \end{aligned}$$

$$\begin{aligned}
&= \frac{2739}{\sqrt{2147} \sqrt{3925}} \\
&= \frac{2739}{46.34 \times 62.65} \\
&= \frac{2739}{2903.20} \\
&= 0.94
\end{aligned}$$

Therefore, reliability of whole test (r_{tt})

$$\begin{aligned}
&= \frac{2r_{xy}}{1 + r_{xy}} \\
&= \frac{2 \times 0.94}{1 + 0.94} \\
&= \frac{1.80}{1.94} \\
&= 0.97
\end{aligned}$$

Also,

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{1}{N_1} + \frac{1}{N_2}}}, \text{ df} = N_1 + N_2 - 2$$

Where,

\bar{X}_1 = mean achievement of the students through first process

\bar{X}_2 = mean achievement of the students through second process

N_1 = Number of students involved in first

N_2 = Number of students involved in second

S_1^2 = Variance of the first

S_2^2 = Variance of the second

$$\text{And } SP^2 = \frac{(N_1 - 1) S_1^2 + (N_2 - 1) S_2^2}{N_1 + N_2 - 2}$$

Appendix-E

विद्यालयको नाम :

..विद्यार्थीको नाम :

रोल नं. :

कक्षा : 4

ठिक उत्तरमा रेजा ($\sqrt{\quad}$) चिन्हलगाउ ।

१) आठलाख दुई हजार पाच सय असिलाई अंकमा लेख्दा कसरी लेखिन्छ ।

क) 8,02,508 ख) 8,02,580 ग) 8,02, 158 घ) 80,258

२) 58963 लाई अक्षरमा लेख्दा कसरी लेखिन्छ ।

क) पचास हजार नौसयत्रीसठ्ठि ख) अन्ठाउन्न लाखनौसय त्रीसठ्ठि

ग) पाचालाख उनानस्से हजार त्रीसठ्ठि घ) अन्ठाउन्न हजार नौ सय त्रीसठ्ठि

३) 180 नाप बराबर भएको कोणलाई के भनिन्छ ?

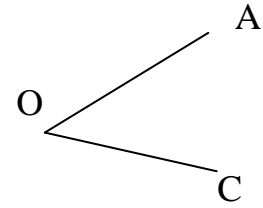
क) सरलकोण ख) समकोण ग) अधिककोण घ) वृहतकोण

४) 52,893मा 8 कुन स्थानमा छ ?

क) एक ख) सय ग) दस घ) दसहजार

५) दिएको कोणको नाम के हो ?

क) ABC ख) AOC ग) ACO घ) AOC



६) 556 लाई नजिकको दसमा शून्यान्तर गर्दा कति हुन्छ ?

क) 560 ख) 570 ग) 550 घ) 600

७) तलकामध्ये कुन संख्या रुठ होइन?

क) 2 ख) 3 ग) 4 घ) 5

८) 32 का गुणनखण्डहरू कुन कुन हुन ?

क) $2 \times 2 \times 4 \times 4$ ख) $2 \times 2 \times 3$ ग) $2 \times 3 \times 3 \times 3$ घ) $2 \times 2 \times 2 \times 2 \times 2$

९) $5/10$ लाई दशमलवमा लेख्दा कति हुन्छ ?

क) 0.2 ख) 2.0 ग) 5 घ) 0.5

१०) छाया पारेको भागलाई भिन्नमा लेख्दाकति हुन्छ ?



क) $2/4$ ख) $3/4$ ग) $1/4$ घ) $4/3$

११) 45 से.मि. लाई मिटरमा बदल्दा कति हुन्छ ?

क) 0.45 मिटर ख) 450 मिटर ग) 45 मिटर घ) 3 मिटर

१२) २ रुपैयामा कति पैसा हुन्छ ?

क) 200 पैसा ख) 20 पैसा ग) 2000 पैसा घ) 0.2 पैसा

१३) वर्गको क्षेत्रफल निकाल्ने सूत्र कुनहो ?

क) लम्वाई \times चौडाई ख) लम्वाई \times उचाई

ग) लम्वाई \times लम्वाई घ) चौडाई \times उचाई

१४) 2500 मि.ली पानीमा कति लिटर र कति मि.लीपानी हुन्छ ?

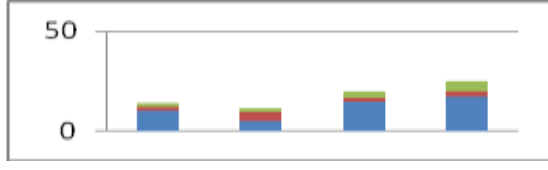
क) 2 लि 500 मि.ली ख) 25 लि 100 मि.ली

ग) 250 लि 10 मि.ली घ) 25 लि 500 मि.ली

१५) 2 कि.ग्रामा कति ग्राम हुन्छ ?

क) 20 ग्राम ख) 400 ग्राम ग) 200.0 ग्राम घ) 2000 ग्राम

१६) स्तम्भ लेखाचित्रअनुसार सबैभन्दा कम विद्यार्थी कुन विषयमा पास भएछन् ?



क ख ग घ

क) अंग्रेजी ख) गणित ग) विज्ञान घ) नेपाली

१७) $a = 1$ भए $a+4$ को मानकति हुन्छ ?

क) 5 ख) 6 ग) 4 घ) 3

१८) $3x+5y$ मा कति पद छन् ?

क) 3 पद ख) 4 पद ग) 2 पद घ) 1 पद

१९) $3a + 6a$ कति हुन्छ ?

क) $2a$ ख) $9a$ ग) $6a$ घ) $5a$

२०) $8x$ बाट $2x$ घटाउदा कति हुन्छ ?

क) $4x$ ख) $6x$ ग) $5x$ घ) $10x$

२१) 5 र 9 को योगफल 14 हुन्छ। यो कस्तो वाक्य हो ?

क) झुटो ख) सााचो ग) खुल्ला

२२) 3 वटा विस्कटलाई रु 9 पर्छ भने एउटा विस्कटलाई कति पर्छ ?

क) रु3 ख) रु1 ग) रु6 घ) रु9

२३) सरल हिसाब गर्दा सबैभन्दा पहिले कुनचिन्हको काम गर्नुपर्छ ?

क) गुणन ख) जोड ग) भाग घ) घटाउ

२४) रमेश संग रु 5000 थियो उसले एउटा रेडियो किनी सकेपछि उसंग जम्मा रु 1250 रह्यो भने

रेडियोको मुल्य कतिपच्यो ?

क) 3670 ख) 2650 ग) 3330 घ) 3750

२५) दलएको चित्रको नाम के हो ?

क) त्रिभुज

ख) आयत



ग) वृत्त

घ) वर्ग

२६) $12 \times [] = 96$ मा कोठामा कति हुन्छ ?

क) 9

ख) 8

ग) 7

घ) 5

२७) 1 दिनमा 24 घण्टा हुन्छ भने 5 दिनमा कति हुन्छ ?

क) 134 घण्टा

ख) 94 घण्टा

ग) 120 घण्टा

घ) 87 घण्टा

Appendix-F

The researcher conducted an interview with the head teacher and subject teacher at grade IV. Individual open question has been derived on the following.

- 1) What differences in student's achieving did you find before and after CAS implemented?
-
- 2) What difference did you find between traditional evaluation system and continuous assessment system?
-
- 3) Why is CAS and non CAS girl student's achievement insignificantly different?
-
- 4) Why CAS students have better achievement in mathematics than non-CAS student?
-
- 5) What problem do mathematics teacher and school administration or face while implementing CAS?
-

Appendix-G

S.N.	Sample of CAS school
1	Bagawati primary school
2	Ramjankiprimari school
3	Badrinath primary school
4	Janta primary school
5	Bhadgaunsinuwari higher secondary school
6	Janta higher secondary school
7	Dharan Adarsa high school
8	Janaksmriti secondary school
9	Sarada higher secondary school
10	Janta higher secondary school

S.N.	Sample of non –CAS school
1	Rajeswari primary school
2	Sehara primary school
3	Sankar primary school
4	Ramdhuni secondary school
5	Janta higher secondary school
6	Thule Mohar primary school
7	Sanischare secondary school
8	Prakash higher secondary school
9	Bhawani primary school
10	Kachana secondary school

