

**MISCONCEPTIONS OF LOWER SECONDARY SCHOOL STUDENTS IN
GEOMETRY**

A

THESIS BY:

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LETTER OF APPROVAL

A

THESIS BY

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Entitled

“Misconceptions of Lower Secondary School Students in Geometry” has been approved in partial fulfillment of the requirement for the degree of Masters of Education.

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LETTER OF CERTIFICATE

This is to certify that **Mr. Mahendra Bahadur Shahi** a student of academic year 2068/069 BS with thesis No.1043, exam Roll No. 281695 (2069), campus Roll No. 219 and T.U. Regd. No. 9-1-57-515-2005 has completed his thesis under my supervision during the period prescribed by the rules and regulations of T.U. Nepal. The thesis entitled **Misconceptions of Lower Secondary School Students in Geometry** embodies the result of his investigation conducted during the period of 2015/016 under the Department of Mathematics Education, University Campus, Tribhuvan University, Kirtipur, Kathmandu. I recommend and forward this thesis to be submitted for the evaluation to award the degree of Master of Education.

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Date:

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ABSTRACT

This study was conducted in order to find out misconceptions of lower secondary students in geometry. The main objective of research was to explore and classify misconceptions of lower secondary school students in geometry according to van Hiele levels. The descriptive survey design was used and van Hiele level of geometric thinking was considered as main theoretical basis of the study.

All the students of lower secondary level in Chamunda resource center were considered as the population of the study. Eight public schools were selected purposively. All the Lower Secondary students (VIII grade) were taken as sample for the study. There were 215 students in the sample for van Hiele test. A sub-sample of 20 students was selected randomly from the sample for interview.

A van Hiele geometry test and an interview (semi- structured) were used as research tools. The van Hiele geometry test containing 20 multiple choice items with five alternatives on each was used as the written test. The validity of the test was established by constructing the questions following content points, objective and van Hiele level of thinking. To evaluate reliability of test it was piloted to 25 lower secondary level students of Dailekh district not involved in the sample and found coefficient of reliability 0.91. A semi structured interview schedule was developed in order to identify the misconceptions of students regarding geometry. The interviewer involved guided questions to the

respondent. Reliability of interview was established by piloting repeatedly and validity was constructed with judgment of expert also.

The data were collected from answer sheet and responses of interview. The data collected from test were analyzed by comparing frequencies of students (with percentage) on different van Hiele levels of geometric thought. And the data from interview were analyzed by categorizing the misconceptions experienced by students in different van Hiele levels.

The distribution of students on level 0, level 1, level 2 were 61.2% , 28.7% and 10.1% respectively. Such figures showed that majority of students were limited to visual level. The lower percentage of students at level 1 and level 2 indicate more misconceptions on higher levels of thinking in geometry.

About three fourth of interviewed students were limited to visual level so that most of the misconceptions are found on this level. The misconceptions of students were found mainly on orientation of shapes (55%), understanding of definition (60%) angle concept (90%) and class inclusion relations (90%).

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