A Study of Basic Knowledge of Mathematics of the Students Majoring in Mathematics

Marasri Naewchampa[1*]
[1*]Faculty of Sciences, Ubon Ratchathani Rajabhat University, Thailand
Bounchanh Vongthongkha[2] **and Sitha Thammavongsa**[3]
[2,3]Faculty of Sciences, Champasack University, LAO PDR

Abstract

The research aimed to study basic knowledge of mathematics of the first-year students majoring in mathematics at the University of Champasak and Ubon Ratchathani Rajabhat University in the academic year 2015. The research instrument was an objective test to measure basic knowledge of mathematics. The instrument of 60 items created by the researchers to measure basic knowledge of mathematics had a difficulty value of 0.20-0.80 and a discrimination value of 0.20-0.72. Population in the study was the first-year students numbering 85 from the University of Champasak and Ubon Ratchathani Rajabhat University. Statistics used were mean, percentage, and content analysis. The study found that basic knowledge of mathematics of the students from the University of Champasak accounted for 38.93% and of those from Ubon Ratchathani Rajabhat University accounted for 37.62%. An overall result of the total students was 38.28%. Based on the content analysis, it was found that the first three areas which should be first improved were calculus, vector, order and series.

Keywords: Mathematics Students, Basic Knowledge of Mathematics at the Upper Secondary Level

Faculty of Sciences, Ubon Ratchathani Rajabhat University
2 Ratchathani Road, Mueang District, Ubon Ratchathani Province, 34000, Thailand
Tel. +66-45-352000 ext.1401 E-mail: 17dyopk2501@gmail.com

Introduction

In learning mathematics, it is essential for learners to depend on their fundamental knowledge of mathematics, especially at the secondary level. Without that, it is likely that learners may not be successful at a tertiary level. With these reasons, it is imperative for those concerned to expose learners to basic knowledge of mathematics.

As committee members and teachers of mathematics, researchers viewed that it is very important to develop a fundamental knowledge of mathematics for learners so that they are able to succeed in learning mathematics. However, for that to happen, it is very necessary to know a background knowledge of the first-year students in order to point out their weakness and strengths.

Objectives

1. To explore a fundamental knowledge of mathematics of the first-year students of the University of Champasak.

2. To explore a fundamental knowledge of mathematics of the first-year students of Ubon Ratchathani Rajabhat University.

Research Scope

1. Population was the first-year students of the University of Champasak and Ubon Ratchathani Rajabhat University.

2. The work was a survey research.

3. The research duration was from May to August 2015.

Research Methodology

Population

The population in the study was the first-year students of mathematics of the University of Champasak and Ubon Ratchathani Rajabhat University. The subjects of 85 were divided into two groups: 1. Eleven first-year students of mathematics of the University of Champasak and 2. Seventy-four first-year students of mathematics of Ubon Ratchathani Rajabhat University in the academic year 2015.

Research Instrument

The research instrument was a subjective test to measure the fundamental knowledge of mathematics at the higher school level. The instrument was created according to the set frame at the secondary level. The 60-item test had a difficulty value of 0.20-0.80 and a discrimination value of 0.20-0.72.

Data collection

A letter of request was sent to the University of Champasak to seek permission. Data were collected during July and August, 2015.

Data Analysis

Data were analyzed by using Microsoft Office Excel 2007. Statistics used were percentage, mean and standard deviation.

Results

1. The results of the test on basic knowledge of mathematics of the students in the study were shown in table 1.

Table 1 Results of an analysis of basic knowledge in mathematics at the upper secondary level

Item	Champasak	UBRU	Total
No of students	11	74	85
Lowest score	8	13	8
Highest score	32	34	34
Mean	23.36	22.57	22.97
Percentage	38.93	37.62	38.28
Standard deviation	8.21	5.02	6.62

From table 1 it was found that the basic knowledge of mathematics of the students in the study represented 38.93% and 37.62%. An overall performance constituted 38.28%.

2. The results of analyzing the basic knowledge of mathematics of the first-year students were illustrated in table 2.

Table 2 Basic knowledge of mathematics according to contents

Oder to be improved	Name of the content	Percentage
1	Calculus	24.66
2	Vector	27.7
3	Order and serial	30.27
4	Matrix	35.14
5	Relation and function	35.41
6	Number system	36.22
7	Mathematics in daily life	37.67
8	Exponential and log arithm	38.51
9	Statistics and probability	38.85
10	Analytic Geometrics	41.22
11	Tri-gonomy function	45.27
12	Logic	49.66
13	Set	57.39

From table 2, it was found that the area in which learners scored higher than 50% was 'set'. As for the remaining areas, the scores were lower than 50%. Considering the areas which should be most improved were calculus, vector and order and series.

Conclusion

1. Basic knowledge of mathematics of the first-year students of the University of Champasak accounted for 38.93%.

2. Basic knowledge of mathematics of the first-year students of UBRU accounted for 37.62%.

Recommendations

1. Recommendations for application

The department or program should have a course on mathematics for students at a degree level. The contents to be given should be based on the following order: calculus, vector, series and order, matrix, relations and function, numeral system, daily life mathematics, exponential function, logarithm, statistics and probability, geometrics, trigonemy , logic and set.

2. Recommendations for further research

The procedure should be applied in other courses. The study results should be studied and used to improve students' learning ability.

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