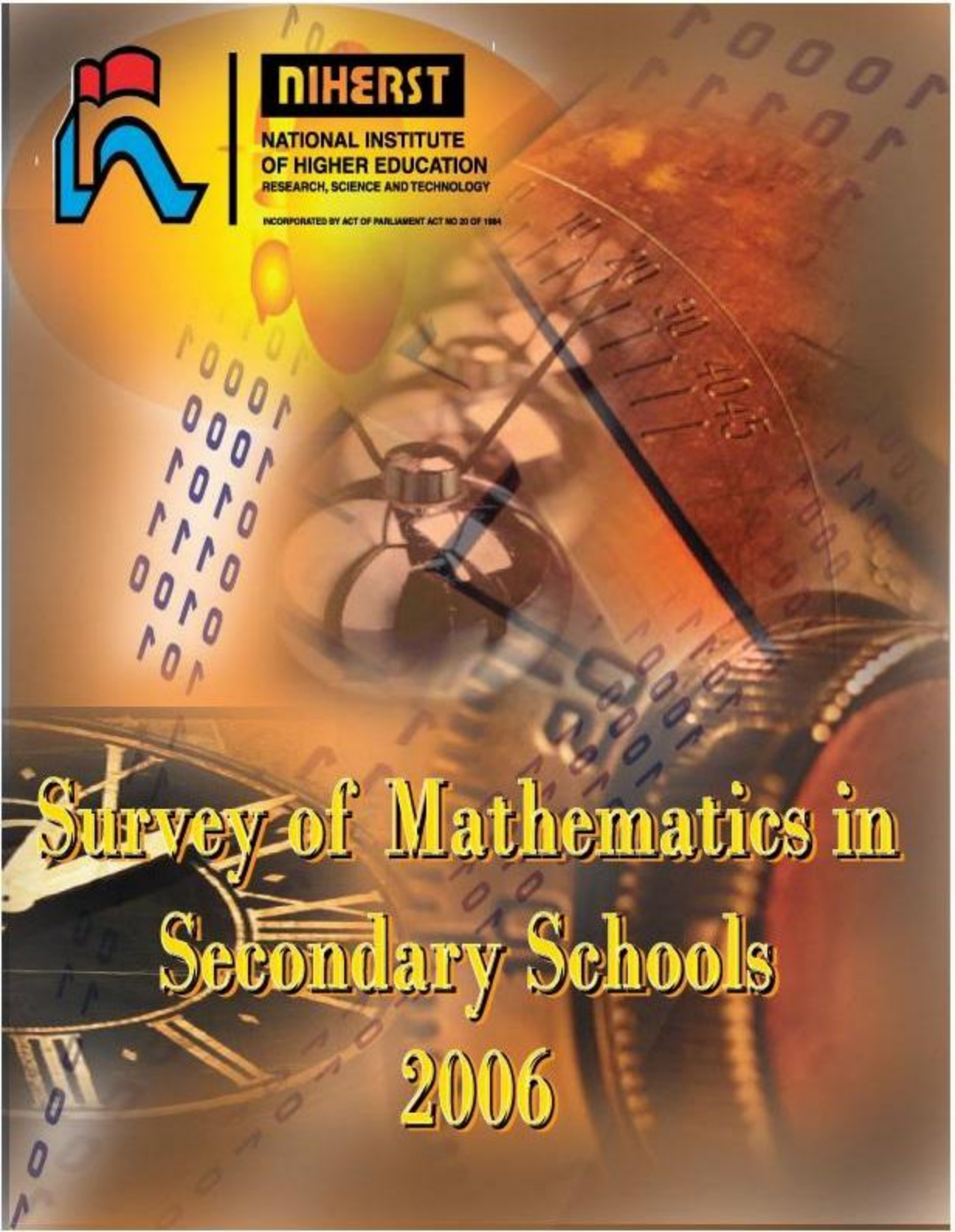
NIHERST
NATIONAL INSTITUTE
OF HIGHER EDUCATION
RESEARCH, SCIENCE AND TECHNOLOGY
INCORPORATED BY ACT OF PARLIAMENT ACT NO 20 OF 1994
Survey of Mathematics in
Secondary Schools
2006

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# Foreword

In this publication, the National Institute of Higher Education, Research, Science and Technology (NIHERST) presents the results of the Survey of Mathematics in Secondary Schools, 2006.

The Survey of Mathematics in Secondary Schools, 2006 was a two-part enquiry of teachers and students in Forms 1 to 4 in all government, government-assisted and private secondary schools. The major objectives of this study were to compile data on the profile of secondary school teachers, training needs, choice of career and difficulties encountered in teaching mathematics. The adequacy and availability of teaching aids and textbooks, teaching and evaluation methods and students' attitudes towards mathematics and mathematical careers were also addressed in the enquiry.

The teaching and understanding of mathematics are essential to the total development of the student and by extension impacts directly on the level of numeracy in the population. The results of this study are therefore intended to provide data on key education indicators necessary for improving the quality of mathematics education to the benefit of all stakeholders.

NIHERST wishes to thank the Ministry of Education for approving the conduct of this study in secondary schools. We also acknowledge the co-operation of the teachers and students who willingly provided the data collated in this report.

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# Table of Contents

# Acronyms and Abbreviations

Junior Sec – Government Junior Secondary School

Senior Sec/Comp - Government Senior Secondary/Comprehensive School

C.X.C – Caribbean Examinations Council

C.S.E.C. – Caribbean Secondary Education Certificate

CAPE – Caribbean Advanced Proficiency Examination

# Methodology

## Introduction

The empirical results of this study on manpower, physical infrastructure and curriculum content are key indicators in the planning and evaluation of formal mathematics education. This publication should engage the attention of decision-makers, curriculum specialists, researchers, teaching personnel and, in general, stakeholders in mathematics education. This methodology describes the objectives, scope, coverage, data collection and processing of the results of the survey.

## Objectives

Approximately 50% of secondary school candidates fail mathematics at the C.S.E.C. general proficiency level. This enquiry is intended to provide insights into the key factors contributing to this low level of performance in the subject.

The study focused on the quality of teaching, available resources and students' approach towards mathematics by monitoring:

- Teachers' qualifications and training needs
- Adequacy of teaching materials and textbooks
- Areas of difficulty – teaching and understanding
- Assessment methods
- Students' views towards mathematics
- Students' attitudes towards mathematical careers

The survey will also provide benchmark data for a tracer study of C.S.E.C. students and even those who subsequently pursued higher qualifications and careers in mathematics.

## Scope

The scope of this study included information on the demographic and social characteristics of the teachers such as age, gender, educational attainment, professional qualifications and years of service. Teachers also provided information about instructional practices, emphasis on the topics in the mathematics curriculum, teaching resources and assessment strategies. Apart from the socio-demographic characteristics of the students, the survey also examined students' attitudes towards mathematics and mathematical careers, their academic self-concept, classroom and after-school activities and home background.

## Coverage

The frame for the study was obtained from the Central Statistical Office. It contained a total of 204 public and private secondary schools in the various educational districts. Of the 204 secondary schools surveyed, 22, mainly private schools, were out of operation or conducted classes for Form 5 only which was excluded from the enquiry. Table A. shows the number of selections and response rate by type of school.

**Table A. Response by Type of School**

| Type of school | No. selected | No. responded | Responded % |
|---|---|---|---|
| Total | 182 | 161 | 88 |
| 1. Government Junior Secondary | 17 | 16 | 94 |
| 2. Composite | 11 | 10 | 91 |
| 3. Government Senior Secondary/ Comprehensive | 18 | 18 | 100 |
| 4. Government Secondary | 44 | 43 | 98 |
| 5. Government Assisted | 43 | 38 | 88 |
| 6. Private | 49 | 36 | 73 |

## Sample Design

All state schools were stratified by type as shown in Table A in the coverage. With the addition of the private schools, six strata were obtained. The following procedure was then adopted in selecting the form as the sampling unit: commencing with stratum one, Form 1 was selected from the first listed school, Form 2 from the second school and similarly for Forms 3 and 4 from the next consecutive schools. This process was repeated until the schools in the stratum were exhausted. The procedure for selecting the forms from the subsequent strata was similar to that described for stratum one. All students and the mathematics teacher of the selected form were surveyed. Form 5 students were excluded from the study as they were preparing for their final C.S.E.C. examination. Through this selection process, a representative sample of one hundred and sixty one teachers and approximately four thousand students from public and private secondary schools responded to the enquiry.

## Data Collection

Two draft questionnaires, one for teachers and another for students of the selected forms, were designed to achieve the underlying objectives and a pilot study was conducted. The final questionnaires, used for data collection in this survey, were then delivered to each school and subsequently monitored by a group of experienced interviewers. Data collection commenced in February, 2006 and was completed by June, 2006.

## Data Processing

As completed questionnaires were received, data were edited for consistency and omissions. Where discrepancies were identified, questionnaires were returned to the field for verification and correction as necessary. Edited data were captured in the Statistical Package for the Social Sciences (SPSS) version 11.0 software which was used to produce the tabulations in this report.

## Results

The results of the survey are presented in percentages of the sample of respondents in the various tabulations and graphics which follow.

# Executive Summary

The findings of the study indicate:

**Shortage of mathematics teachers**

- This study shows a dearth of graduate teachers in mathematics with professional training in the government, government-assisted and private secondary schools. Of the sample of 161 teachers engaged in teaching Mathematics, 28% held a first degree in the subject and only 16% graduated in Mathematics and also obtained professional qualification.

- Of all 161 mathematics teachers, 57% graduated in various fields of study, mainly in mathematics (28%) and natural sciences (11%), and 33% possessed A'level qualification. Forty percent (40%) of all teachers were professionally qualified mainly with a Diploma in Education (19%) and a Teacher's Diploma (11%).

- The largest proportion (35%) of the sample of mathematics teachers reported service of less than five years while 30% indicated teaching experience of 15 years and over.

**A continuation of the traditional 'chalk and talk' method of teaching**

- Two-thirds (66%) of the teachers indicated that computers were not available for use in mathematics by students. Of the percentage of computers available for use, 46% had access to the internet for mathematics.

- One-half (50%) of the secondary school mathematics teachers who participated in the survey stated that they did not use the internet as a teaching resource while 38% used it 'a little'.

- One-half of the teachers (53%) reported restricted use of calculators by students while one-quarter (25%) stated that calculators were not permitted.

- Approximately two-fifths of the teachers in each case indicated that, at every lesson students worked 'individually with assistance from the teacher' (39%) and 'together as a class with the teacher teaching the whole class' (41%).

- A significant proportion (89%) of the students never used computers in their mathematics class.

- Ninety-three percent (93%) indicated that teachers frequently showed them how to do mathematics problems.

**Positive attitudes towards mathematics and careers in mathematics**

- Overall, the majority of the mathematics teachers (60%) in secondary schools stated that teaching was their first choice as a career.

- Over three-quarters (79%) indicated that they were not desirous of changing to another career and two-thirds (67%) who did not report teaching as their first choice of career were similarly disposed.

- Most of the students surveyed agreed with the statements: 'I think learning mathematics will help me in my daily life' (94%), 'I need to do well in mathematics to get the job I want' (93%), 'I need mathematics to learn other school subjects' (85%) and 'I like mathematics' (81%).

**Computer literacy:**

- The majority (94%) of the secondary school students indicated that they used the computer while three-fifths (61%) had access to a home computer.

**Instructional time and syllabus content**

- The study shows that the highest percentage of teaching time was spent on algebra which was identified as the most difficult area of the mathematics syllabus for students to conceptualise, followed by geometry and trigonometry.

- The data reveal that the most frequently performed mathematical activity was the practice of computational skills at 'every lesson' (36%) and 'most lessons' (52%).

- According to the students, activities including, 'the teacher shows us how to do maths problems' (93%) and 'we discuss our completed homework' (79%) occurred most frequently in their mathematics class.

- The majority of students surveyed, as in the case of the teachers, reported five mathematics periods each week.

**Time spent outside the formal school day**

- Teachers devoted more time, mainly between 1 and 2 hours, in planning lessons, preparing or grading student tests or examinations and in professional reading and development.

- Over one-third of the sample of secondary school mathematics teachers attended monthly (38%) or weekly (35%) meetings with other teachers in their subject area to discuss and plan curriculum and teaching methods.

- Only one-third (32%) attended curriculum workshops in mathematics and a considerably smaller percentage (13%) was exposed to workshops in assessment. By comparison, attendance at workshops in teaching methods (40%) showed some improvement.

- The data show that students devoted most time doing homework on a normal school day.

**Adequacy and use of textbooks**

- In general, a significant percentage (93%) of the teachers used textbooks to teach mathematics.

- Two-thirds (66%) used textbooks as a supplementary resource compared to one-third (34%) as the primary basis for their lessons.

- The majority (47%) of the students brought their textbooks to school for every mathematics lesson while one-third (33%) did so sometimes.

- A relatively large proportion (77%) of the sample of students stated that the STP Maths for the Caribbean Series Book1-Book4 was adequate compared to teachers (54%).

**Homework assignment**

- A substantial percentage (71%) of teachers, especially in the state and state-assisted schools, assigned mathematics homework 'everyday' and one-quarter (25%) did so 'once or twice a week'.

- Over a half (58%) of the students surveyed indicated that teachers assigned mathematics homework 'every time'. The highest percentage (67%) of students who were assigned homework 'every time' was observed in the government-assisted schools.

**Issues that limited teaching of the subject**

- On issues that limited their teaching of mathematics, a substantial percentage of teachers identified 'disruptive students' (47%), 'students who come from a wide range of backgrounds' (45%) 'parents interested in their children's learning and progress' (44%) and 'student absenteeism' (42%).

- A significant proportion (84%) of the teachers stated that threats to personal safety or the safety of students had little or no effect on the teaching of mathematics.

- Approximately three-fifths of the mathematics teachers reported no difficulty in planning lessons (62%) and assessment strategies (61%).

**Extra Lessons**

- Approximately a quarter (27%) of the sample of mathematics teachers gave extra lessons compared with two-thirds (67%) who did not.

- Three-fifths (61%) of the total sample of secondary school students did not take extra lessons or tutoring.

- Further examination of the data by form indicates that students in the higher Forms, 3 and 4, accessed extra lessons or tutoring more frequently than their counterparts in the lower Forms, 1 and 2.

**Students' academic self-concept:**

- A significant percentage (72%) of the total sample of secondary schools students expressed a desire to attain university-level education. The highest percentage of students desirous of obtaining this level of education was observed in the government-assisted (84%) and government secondary schools (71%).

- Almost all (97%) of the students surveyed agreed that 'lots of hard work and studying at home' was necessary to do well in mathematics at school, and a substantial proportion (71%) dispelled any notion to the contrary by disagreeing that 'good luck' was needed to perform well in the subject.

# Teachers

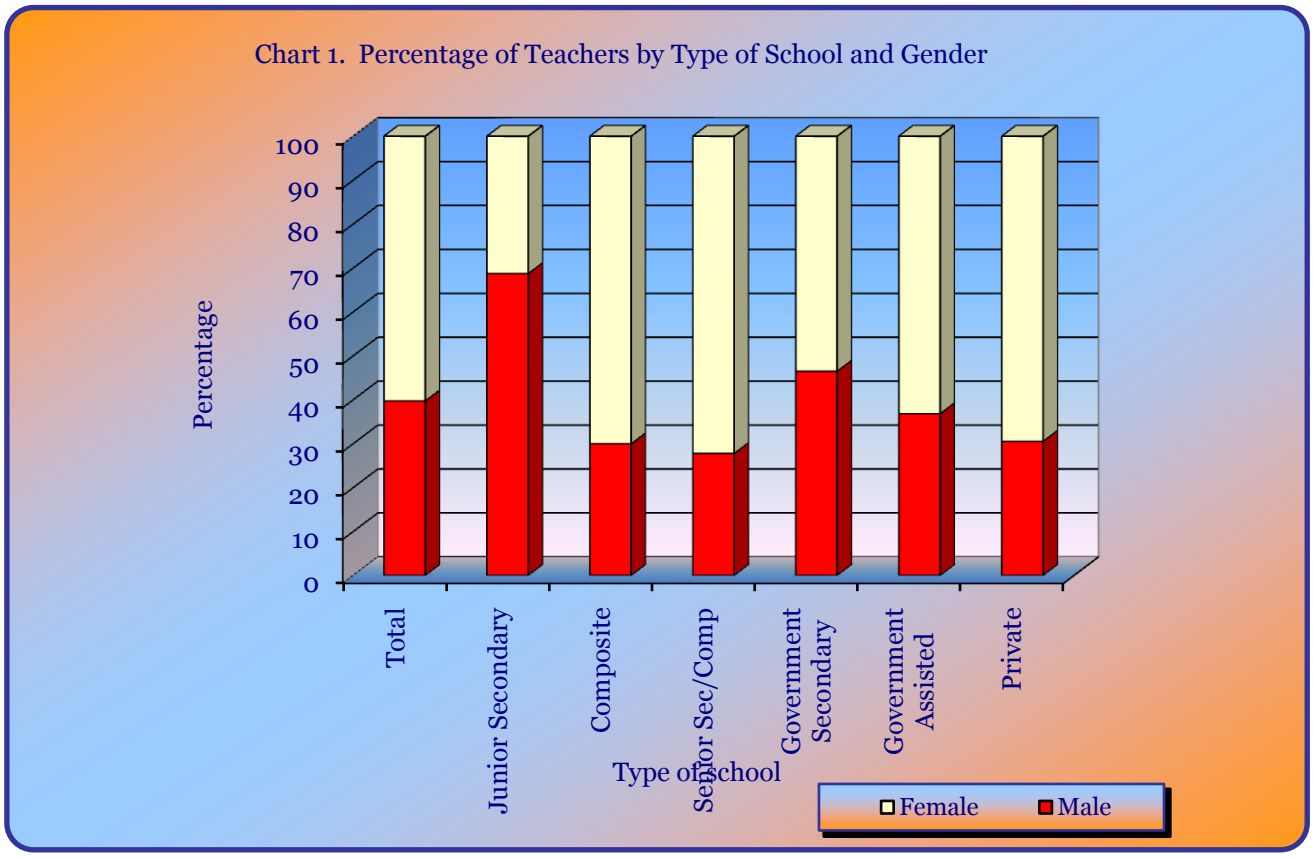
## Table 1. Number of Teachers by Type of School and Gender

| Type of school | Gender | | |
|---|---|---|---|
| | Total | Male | Female |
| | (1) | (2) | (3) |
| Total | 161 | 64 | 97 |
| Junior Secondary | 16 | 11 | 5 |
| Composite | 10 | 3 | 7 |
| Senior Sec/Comp | 18 | 5 | 13 |
| Government Secondary | 43 | 20 | 23 |
| Government Assisted | 38 | 14 | 24 |
| Private | 36 | 11 | 25 |

## Table 1a. Percentage of Teachers by Type of School and Gender

| Type of school | Gender | | |
|---|---|---|---|
| | Total | Male | Female |
| | (1) | (2) | (3) |
| Total | 100 | 40 | 60 |
| Junior Secondary | 100 | 69 | 31 |
| Composite | 100 | 30 | 70 |
| Senior Sec/Comp | 100 | 28 | 72 |
| Government Secondary | 100 | 47 | 53 |
| Government Assisted | 100 | 37 | 63 |
| Private | 100 | 31 | 69 |

Table 1 shows the distribution of mathematics teachers surveyed by type of secondary school and gender. Of the total sample of 161 teachers, 40% were males while 60% were females, representing a 1:1.5 male to female ratio. Females out-numbered their male counterparts in all types of schools except the junior secondary which comprised approximately two thirds (69%) males and one-third (31%) females.




Source: Table 1

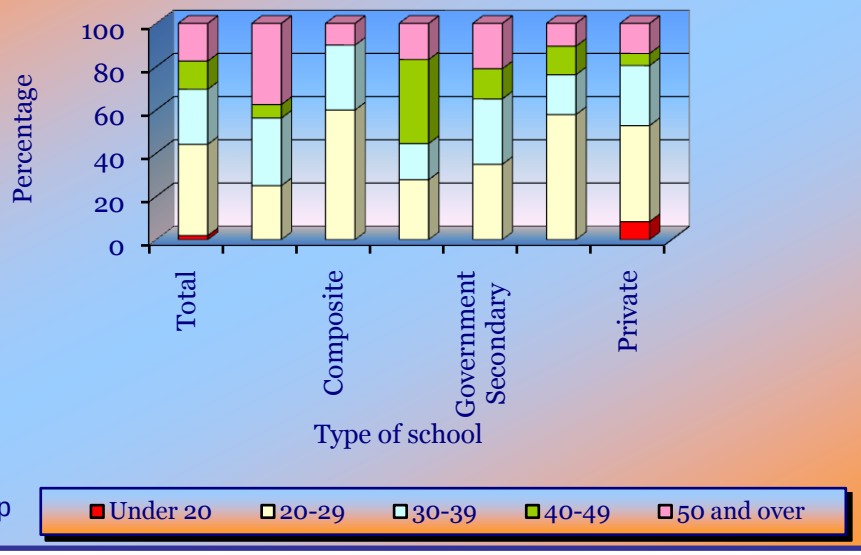
## Table 2. Number of Teachers by Type of School and Age

| Type of school | Age group - years | | | | | |
|---|---|---|---|---|---|---|
| | Total | Under 20 | 20-29 | 30-39 | 40-49 | 50 and over |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Total | 161 | 3 | 68 | 41 | 21 | 28 |
| Junior Secondary | 16 | 0 | 4 | 5 | 1 | 6 |
| Composite | 10 | 0 | 6 | 3 | 0 | 1 |
| Senior Sec/Comp | 18 | 0 | 5 | 3 | 7 | 3 |
| Government Secondary | 43 | 0 | 15 | 13 | 6 | 9 |
| Government Assisted | 38 | 0 | 22 | 7 | 5 | 4 |
| Private | 36 | 3 | 16 | 10 | 2 | 5 |

## Table 2a. Percentage of Teachers by Type of School within Age Group

| Type of school | Age group - years | | | | | |
|---|---|---|---|---|---|---|
| | Total | Under 20 | 20-29 | 30-39 | 40-49 | 50 and over |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Total | 100 | 100 | 100 | 100 | 100 | 100 |
| Junior Secondary | 10 | 0 | 6 | 12 | 5 | 21 |
| Composite | 6 | 0 | 9 | 7 | 0 | 4 |
| Senior Sec/Comp | 11 | 0 | 7 | 7 | 33 | 11 |
| Government Secondary | 27 | 0 | 22 | 32 | 29 | 32 |
| Government Assisted | 24 | 0 | 32 | 17 | 24 | 14 |
| Private | 22 | 100 | 24 | 24 | 10 | 18 |

Chart 2. Percentage of Teachers within Age Group and Type of School



## Table 2b. Percentage of Teachers by Age Group within Type of School

| Type of school | Age group - years | | | | | |
|---|---|---|---|---|---|---|
| | Total | Under 20 | 20-29 | 30-39 | 40-49 | 50 and over |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Total | 100 | 2 | 42 | 25 | 13 | 17 |
| Junior Secondary | 100 | 0 | 25 | 31 | 6 | 38 |
| Composite | 100 | 0 | 60 | 30 | 0 | 10 |
| Senior Sec/Comp | 100 | 0 | 28 | 17 | 39 | 17 |
| Government Secondary | 100 | 0 | 35 | 30 | 14 | 21 |
| Government Assisted | 100 | 0 | 58 | 18 | 13 | 11 |
| Private | 100 | 8 | 44 | 28 | 6 | 14 |

In terms of age distribution, the largest percentage (42%) of mathematics teachers was observed in the 20-29 age group, followed by one-quarter (25%) in the 30-39 age category (Table 2b). However, by type of school while a substantial majority of the teachers in the composite (60%), government-assisted (58%) and private schools (44%) was between 20-29 years of age, most of their counterparts in the senior secondary/comprehensive (39%) and junior secondary (38%) schools were between 40-49 years, and 50 years and over, respectively.

## Table 3. Number of Teachers by Age Group and Highest Level of Education

| Age group (years) | Highest level of education | | | | | |
|---|---|---|---|---|---|---|
| | Total | O'levels | A'levels | First degree | Higher degree | Other* |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Total | 161 | 5 | 53 | 86 | 6 | 11 |
| Under 20 | 3 | 0 | 3 | 0 | 0 | 0 |
| 20-29 | 68 | 1 | 32 | 29 | 2 | 4 |
| 30-39 | 41 | 1 | 7 | 26 | 1 | 6 |
| 40-49 | 21 | 0 | 3 | 15 | 2 | 1 |
| 50 and over | 28 | 3 | 8 | 16 | 1 | 0 |

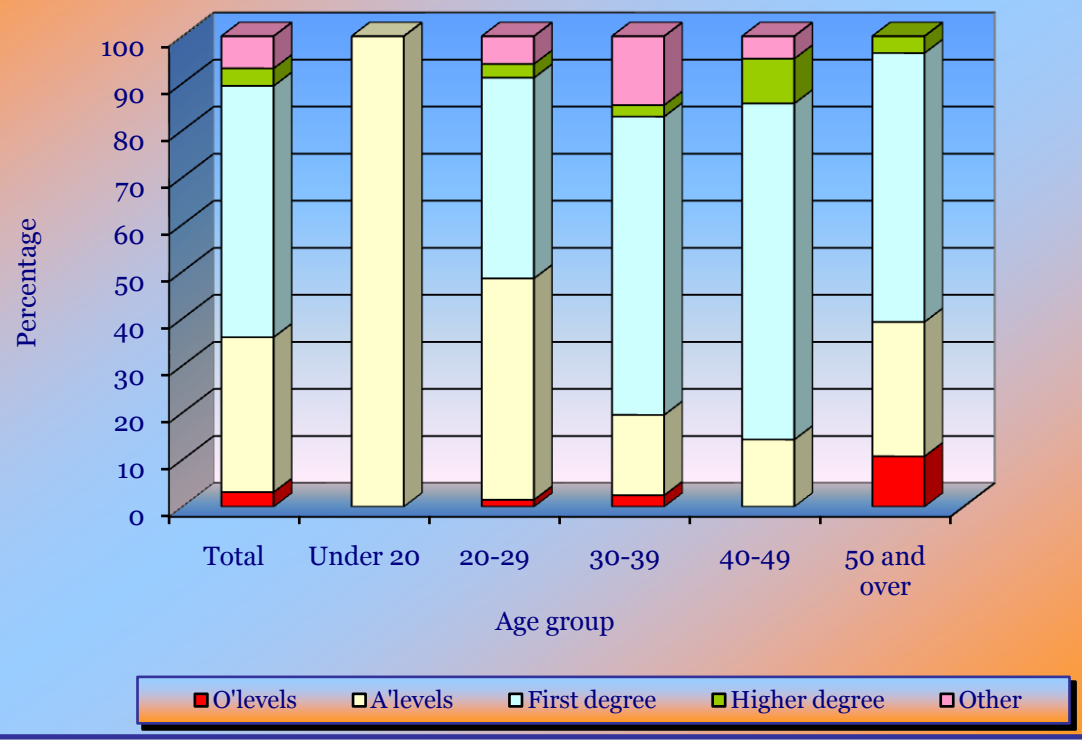
## Table 3a. Percentage of Teachers by Age Group and Highest Level of Education

| Age group (years) | Highest level of education | | | | | |
|---|---|---|---|---|---|---|
| | Total | O'levels | A'levels | First degree | Higher degree | Other* |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Total | 100 | 3 | 33 | 53 | 4 | 7 |
| Under 20 | 100 | 0 | 100 | 0 | 0 | 0 |
| 20-29 | 100 | 1 | 47 | 43 | 3 | 6 |
| 30-39 | 100 | 2 | 17 | 63 | 2 | 15 |
| 40-49 | 100 | 0 | 14 | 71 | 10 | 5 |
| 50 and over | 100 | 11 | 29 | 57 | 4 | 0 |

* Diploma, Associate degree, Association of Certified Chartered Accountants

Table 3 shows the distribution of teachers by age group and highest level of education. In the 20-29 age group an even proportion of mathematics teachers reported A'levels (47%) and university degrees (46%) as their highest qualification. Thereafter, by comparison a significantly larger proportion of graduate teachers was observed in the subsequent age groups.

Chart 3. Percentage of Teachers by Age Group and Highest Level of Education




Source: Table 3

## Table 4. Number of Teachers by Type of School and Highest Level of Education

| Type of school | Highest level of education | | | | | |
|---|---|---|---|---|---|---|
| | Total | O'levels | A'levels | First degree | Higher degree | Other* |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Total | 161 | 5 | 53 | 86 | 6 | 11 |
| Junior Secondary | 16 | 1 | 6 | 8 | 0 | 1 |
| Composite | 10 | 0 | 4 | 5 | 0 | 1 |
| Senior Sec/Comp | 18 | 0 | 2 | 13 | 2 | 1 |
| Government Secondary | 43 | 1 | 15 | 22 | 1 | 4 |
| Government Assisted | 38 | 0 | 6 | 29 | 2 | 1 |
| Private | 36 | 3 | 20 | 9 | 1 | 3 |

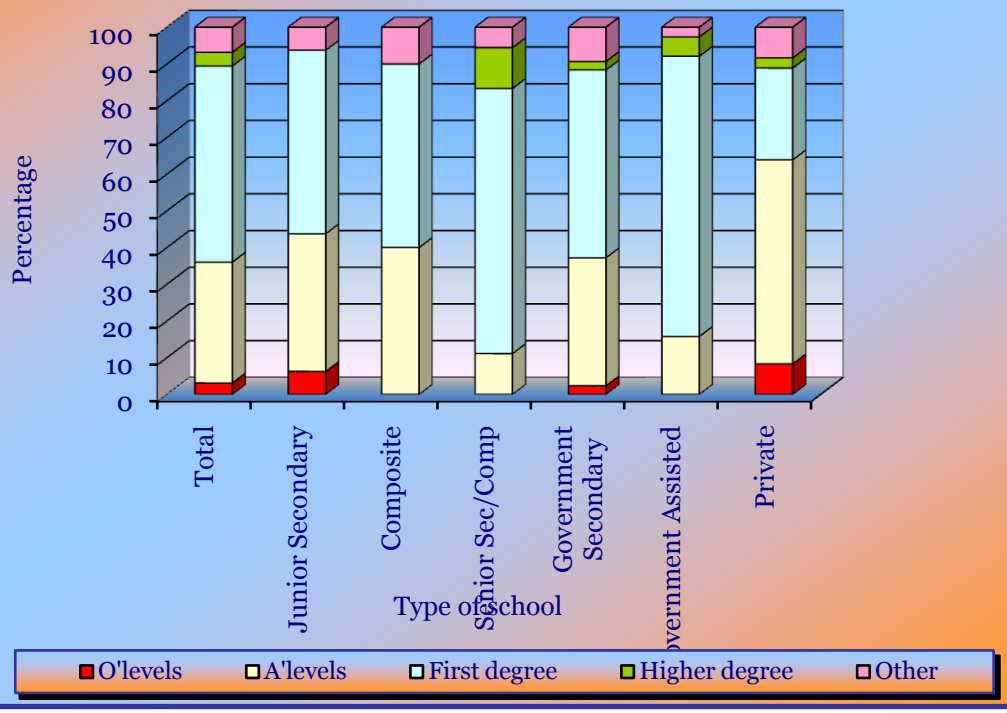
## Table 4a. Percentage of Teachers by Type of School and Highest Level of Education

| Type of school | Highest level of education | | | | | |
|---|---|---|---|---|---|---|
| | Total | O'levels | A'levels | First degree | Higher degree | Other* |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Total | 100 | 3 | 33 | 53 | 4 | 7 |
| Junior Secondary | 100 | 6 | 38 | 50 | 0 | 6 |
| Composite | 100 | 0 | 40 | 50 | 0 | 10 |
| Senior Sec/Comp | 100 | 0 | 11 | 72 | 11 | 6 |
| Government Secondary | 100 | 2 | 35 | 51 | 2 | 9 |
| Government Assisted | 100 | 0 | 16 | 76 | 5 | 3 |
| Private | 100 | 8 | 56 | 25 | 3 | 8 |

* Diploma, Associate degree, Association of Certified Chartered Accountants

Over fifty percent (57%) of the mathematics teachers reported a university degree as their highest level of educational attainment while one-third (33%) possessed A'level qualifications. A further review of the data by type of school shows that the highest percentage of teachers with a first degree or above was in the senior secondary/comprehensive (83%) and government-assisted (81%) schools. In the private secondary schools, the majority (56%) of mathematics teachers held A'level qualifications only.

Chart 4. Percentage of Teachers by Type of School and Highest Level of Education




Source: Table 4

## Table 5. Number of Teachers by Highest Level of Education and Professional Qualification

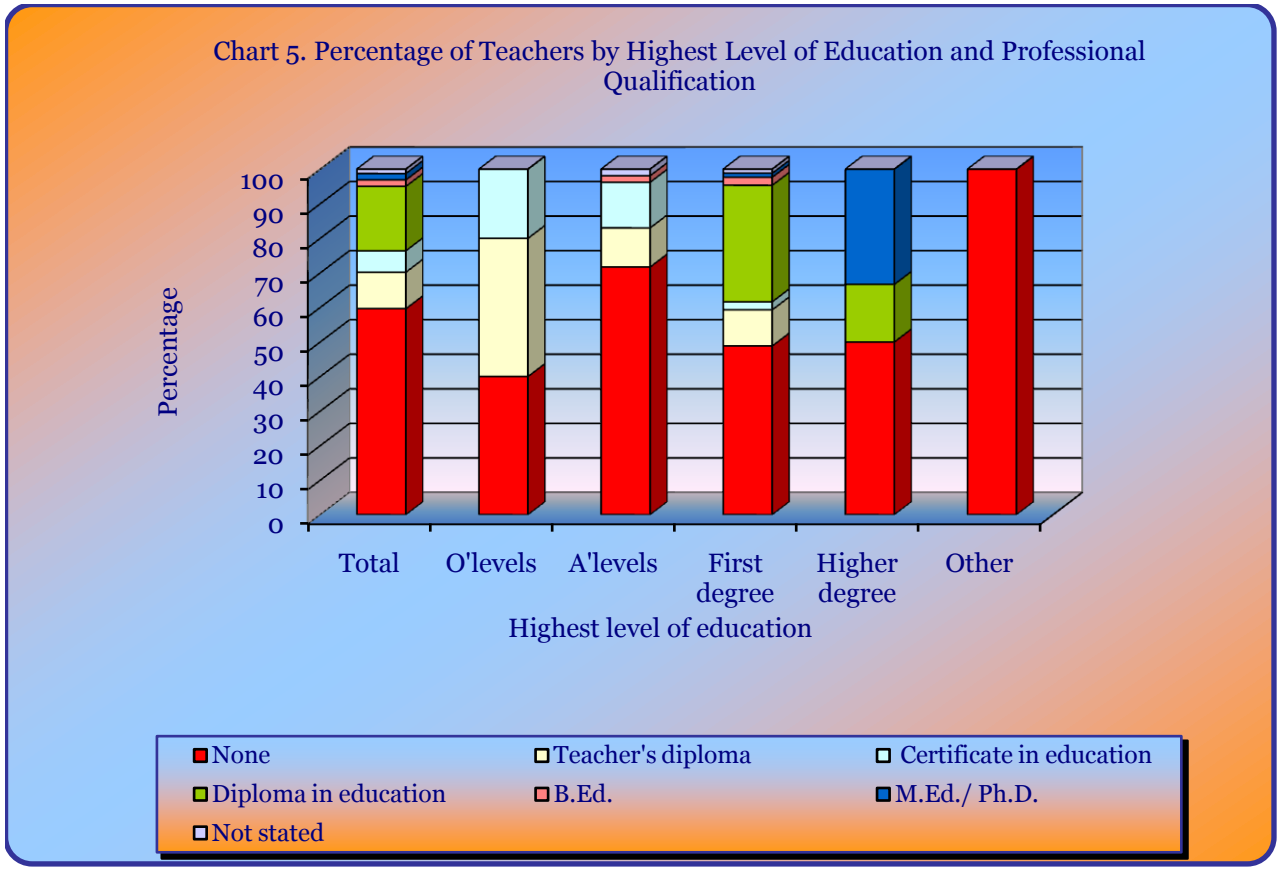
| Highest level of education | Highest professional qualification | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | None | Teacher's diploma | Certificate in education | Diploma in education | B.Ed. | M.Ed./ Ph.D. | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Total | 161 | 96 | 17 | 10 | 30 | 3 | 3 | 2 |
| O'levels | 5 | 2 | 2 | 1 | 0 | 0 | 0 | 0 |
| A'levels | 53 | 38 | 6 | 7 | 0 | 1 | 0 | 1 |
| First degree | 86 | 42 | 9 | 2 | 29 | 2 | 1 | 1 |
| Higher degree | 6 | 3 | 0 | 0 | 1 | 0 | 2 | 0 |
| Other* | 11 | 11 | 0 | 0 | 0 | 0 | 0 | 0 |

## Table 5a. Percentage of Teachers by Highest Level of Education and Professional Qualification

| Highest level of education | Highest professional qualification | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | None | Teacher's diploma | Certificate in education | Diploma in education | B.Ed. | M.Ed./ Ph.D. | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Total | 100 | 60 | 11 | 6 | 19 | 2 | 2 | 1 |
| O'levels | 100 | 40 | 40 | 20 | 0 | 0 | 0 | 0 |
| A'levels | 100 | 72 | 11 | 13 | 0 | 2 | 0 | 2 |
| First degree | 100 | 49 | 10 | 2 | 34 | 2 | 1 | 1 |
| Higher degree | 100 | 50 | 0 | 0 | 17 | 0 | 33 | 0 |
| Other* | 100 | 100 | 0 | 0 | 0 | 0 | 0 | 0 |

* Diploma, Associate degree, Association of Certified Chartered Accountants

The table above shows that teachers with the highest level of education also reported a similar level of professional qualification. Fifty percent (50%) of the teachers with a first and higher degree who were engaged in teaching mathematics were professionally trained.




Source: Table 5

## Table 6. Number of Teachers by Type of School and Highest Professional Qualification

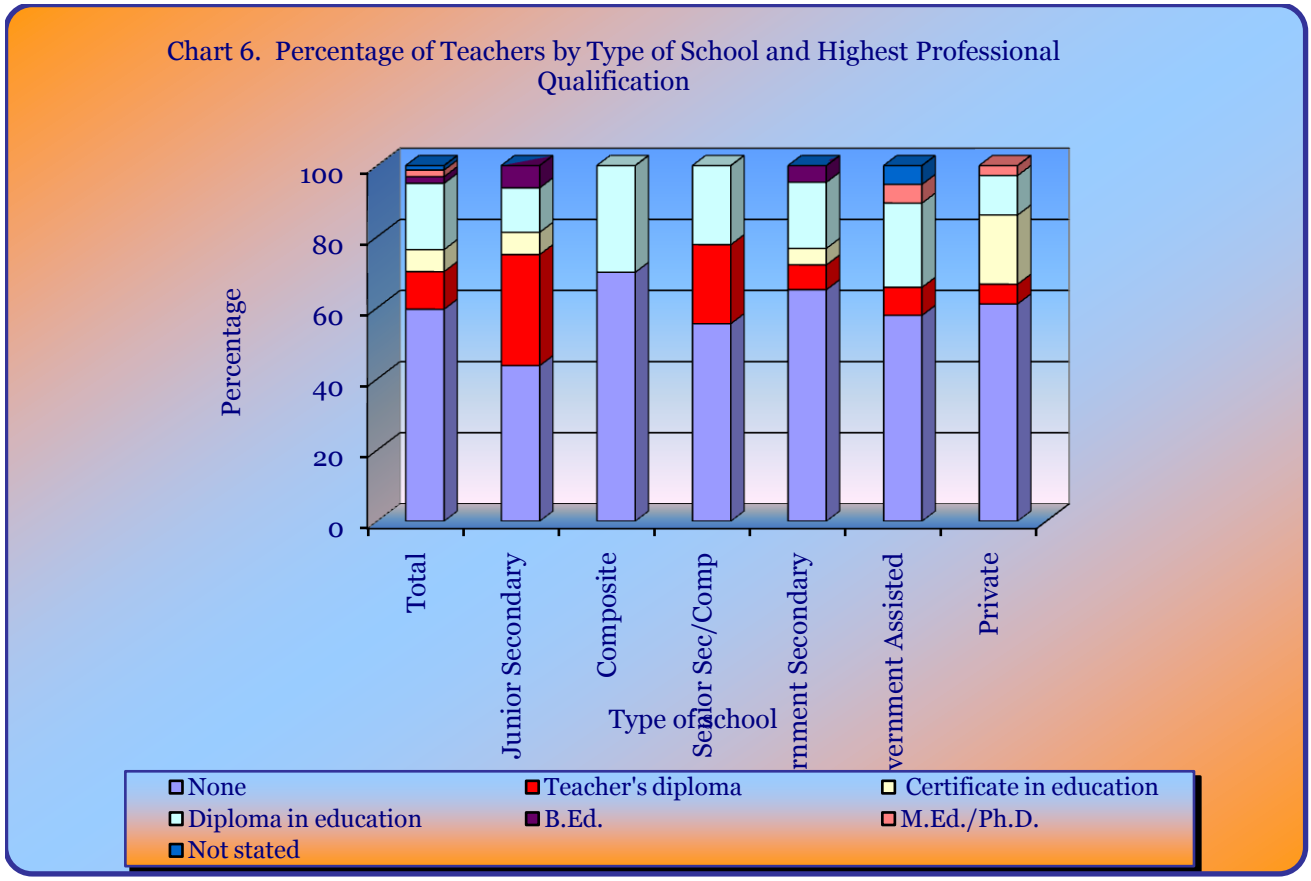
| Type of school | Highest professional qualification | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | None | Teacher's diploma | Certificate in education | Diploma in education | B.Ed. | M.Ed./ Ph.D. | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Total | 161 | 96 | 17 | 10 | 30 | 3 | 3 | 2 |
| Junior Secondary | 16 | 7 | 5 | 1 | 2 | 1 | 0 | 0 |
| Composite | 10 | 7 | 0 | 0 | 3 | 0 | 0 | 0 |
| Senior Sec/Comp | 18 | 10 | 4 | 0 | 4 | 0 | 0 | 0 |
| Government Secondary | 43 | 28 | 3 | 2 | 8 | 2 | 0 | 0 |
| Government Assisted | 38 | 22 | 3 | 0 | 9 | 0 | 2 | 2 |
| Private | 36 | 22 | 2 | 7 | 4 | 0 | 1 | 0 |

## Table 6a. Percentage of Teachers by Type of School and Highest Professional Qualification

| Type of school | Highest professional qualification | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | None | Teacher's diploma | Certificate in education | Diploma in education | B.Ed. | M.Ed./ Ph.D. | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Total | 100 | 60 | 11 | 6 | 19 | 2 | 2 | 1 |
| Junior Secondary | 100 | 44 | 31 | 6 | 13 | 6 | 0 | 0 |
| Composite | 100 | 70 | 0 | 0 | 30 | 0 | 0 | 0 |
| Senior Sec/Comp | 100 | 56 | 22 | 0 | 22 | 0 | 0 | 0 |
| Government Secondary | 100 | 65 | 7 | 5 | 19 | 5 | 0 | 0 |
| Government Assisted | 100 | 58 | 8 | 0 | 24 | 0 | 5 | 5 |
| Private | 100 | 61 | 6 | 19 | 11 | 0 | 3 | 0 |

A significant percentage (60%) of the sample of teachers had no professional qualification. Approximately one-fifth (19%) possessed a diploma in education, followed by 11% with a teacher's diploma. The proportion of mathematics teachers with professional training ranged from 30% in the composite schools to 56% in the junior secondary schools.

Chart 6. Percentage of Teachers by Type of School and Highest Professional Qualification




Source: Table 6

## Table 7. Number of Graduate Teachers by Field of Study and Highest Professional Qualification

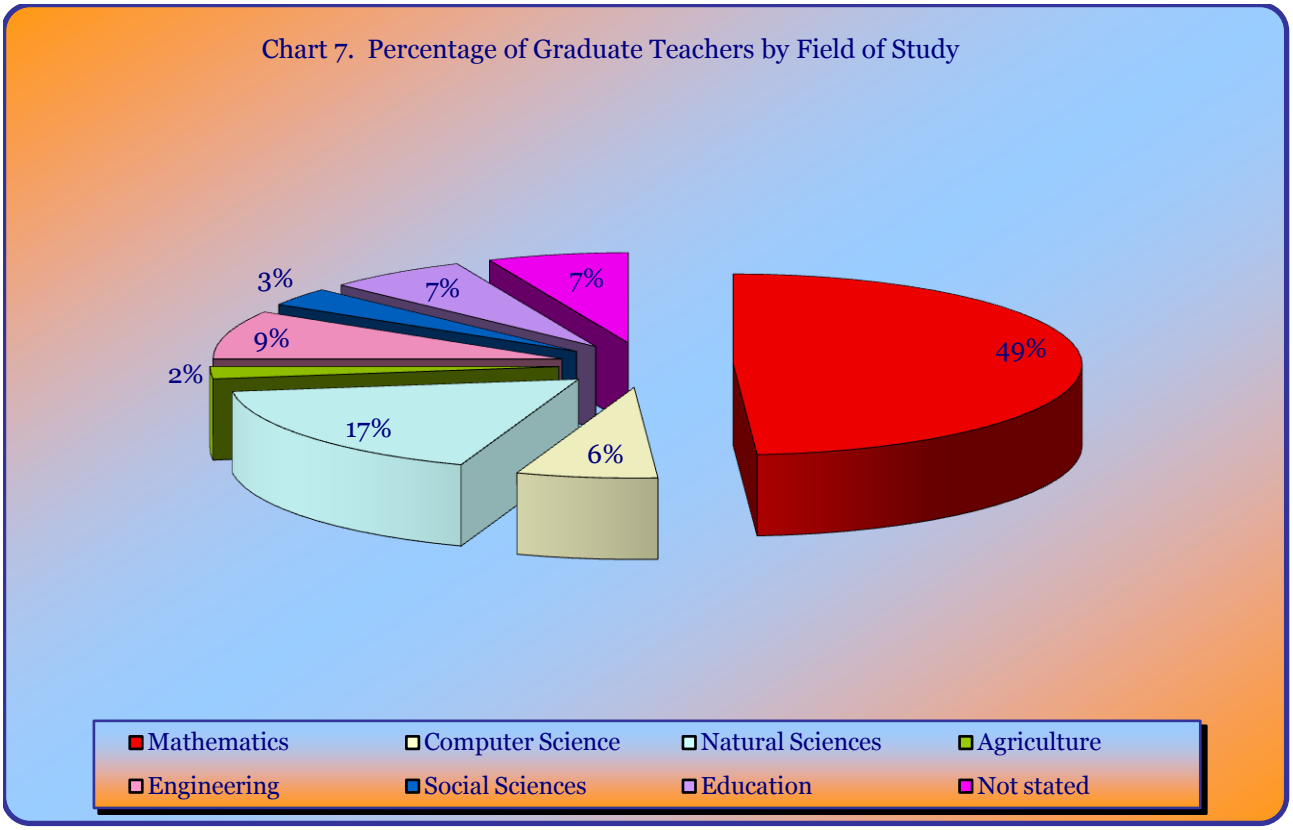
| Field of study | Highest professional qualification | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | None | Teacher training diploma | Certificate in education | Diploma in education | B.Ed. | M.Ed./ Ph.D. | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Total | 92 | 45 | 9 | 2 | 30 | 2 | 3 | 1 |
| Mathematics | 45 | 19 | 4 | 2 | 19 | 0 | 1 | 0 |
| Computer Science | 6 | 5 | 0 | 0 | 1 | 0 | 0 | 0 |
| Natural Sciences | 16 | 11 | 0 | 0 | 4 | 0 | 0 | 1 |
| Agriculture | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 0 |
| Engineering | 8 | 7 | 1 | 0 | 0 | 0 | 0 | 0 |
| Social Sciences | 3 | 0 | 2 | 0 | 1 | 0 | 0 | 0 |
| Education | 6 | 0 | 0 | 0 | 2 | 2 | 2 | 0 |
| Not stated | 6 | 3 | 1 | 0 | 2 | 0 | 0 | 0 |

## Table 7a. Percentage of Graduate Teachers by Field of Study within Highest Professional Qualification

| Field of study | Highest professional qualification | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | None | Teacher training diploma | Certificate in education | Diploma in education | B.Ed. | M.Ed./ Ph.D. | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mathematics | 49 | 42 | 44 | 100 | 63 | 0 | 33 | 0 |
| Computer Science | 7 | 11 | 0 | 0 | 3 | 0 | 0 | 0 |
| Natural Sciences | 17 | 24 | 0 | 0 | 13 | 0 | 0 | 100 |
| Agriculture | 2 | 0 | 11 | 0 | 3 | 0 | 0 | 0 |
| Engineering | 9 | 16 | 11 | 0 | 0 | 0 | 0 | 0 |
| Social Sciences | 3 | 0 | 22 | 0 | 3 | 0 | 0 | 0 |
| Education | 7 | 0 | 0 | 0 | 7 | 100 | 67 | 0 |
| Not stated | 7 | 7 | 11 | 0 | 7 | 0 | 0 | 0 |

Half (49%) of the graduate teachers majored in mathematics, followed by natural sciences (17%) and engineering (9%) (Table 7a). Of the teachers who majored in mathematics, 57% reported professional qualification mainly at the diploma in education level (Table 7b). In addition, the data reveal that of the sample of 161 teachers (Table 1), engaged in teaching mathematics, 45 teachers or 28% (Table 7) graduated with a degree in the subject and only 26 teachers or 16% majored in mathematics and also obtained professional training.

Chart 7. Percentage of Graduate Teachers by Field of Study

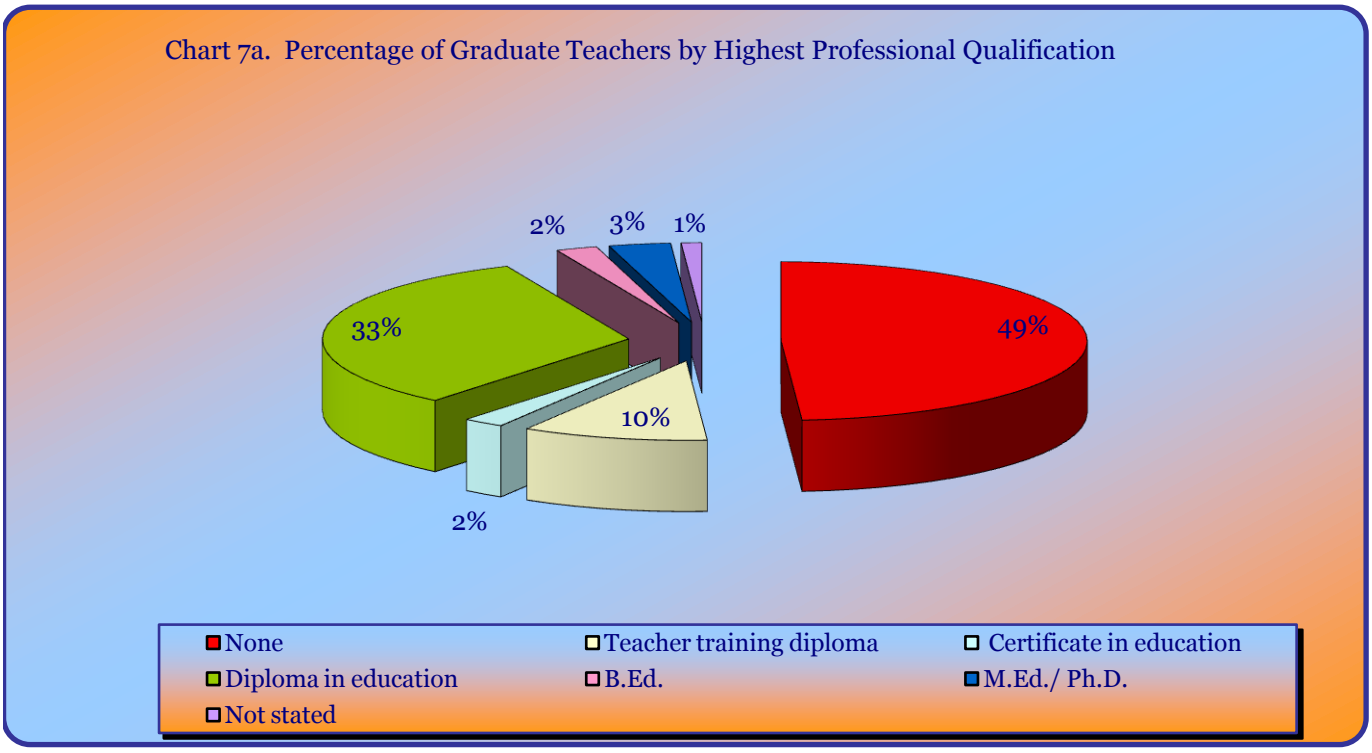



Source: Table 7

## Table 7b. Percentage of Graduate Teachers by Highest Professional Qualification within Field of Study

| Field of study | Highest professional qualification | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | None | Teacher training diploma | Certificate in education | Diploma in education | B.Ed. | M.Ed./ Ph.D. | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Total | 100 | 49 | 10 | 2 | 33 | 2 | 3 | 1 |
| Mathematics | 100 | 42 | 9 | 4 | 42 | 0 | 2 | 0 |
| Computer Science | 100 | 83 | 0 | 0 | 17 | 0 | 0 | 0 |
| Natural Sciences | 100 | 69 | 0 | 0 | 25 | 0 | 0 | 6 |
| Agriculture | 100 | 0 | 50 | 0 | 50 | 0 | 0 | 0 |
| Engineering | 100 | 88 | 13 | 0 | 0 | 0 | 0 | 0 |
| Social Sciences | 100 | 0 | 67 | 0 | 33 | 0 | 0 | 0 |
| Education | 100 | 0 | 0 | 0 | 33 | 33 | 33 | 0 |
| Not stated | 100 | 50 | 17 | 0 | 33 | 0 | 0 | 0 |

Chart 7a. Percentage of Graduate Teachers by Highest Professional Qualification



## Table 8. Number of Graduate Teachers by Field of Study and Type of School

| Field of study | Type of school | | | | | | |
|---|---|---|---|---|---|---|---|
| | Total | Junior Sec | Composite | Senior Sec/Comp | Government Secondary | Government Assisted | Private |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Total | 92 | 8 | 5 | 15 | 23 | 31 | 10 |
| Mathematics | 45 | 2 | 4 | 7 | 13 | 15 | 4 |
| Computer Science | 6 | 0 | 1 | 0 | 2 | 3 | 0 |
| Natural Sciences | 16 | 2 | 0 | 5 | 2 | 6 | 1 |
| Agriculture | 2 | 0 | 0 | 0 | 0 | 0 | 2 |
| Engineering | 8 | 1 | 0 | 1 | 4 | 1 | 1 |
| Social Sciences | 3 | 1 | 0 | 1 | 0 | 0 | 1 |
| Education | 6 | 0 | 0 | 1 | 2 | 2 | 1 |
| Not stated | 6 | 2 | 0 | 0 | 0 | 4 | 0 |

## Table 8a. Percentage of Graduate Teachers by Field of Study and Type of School

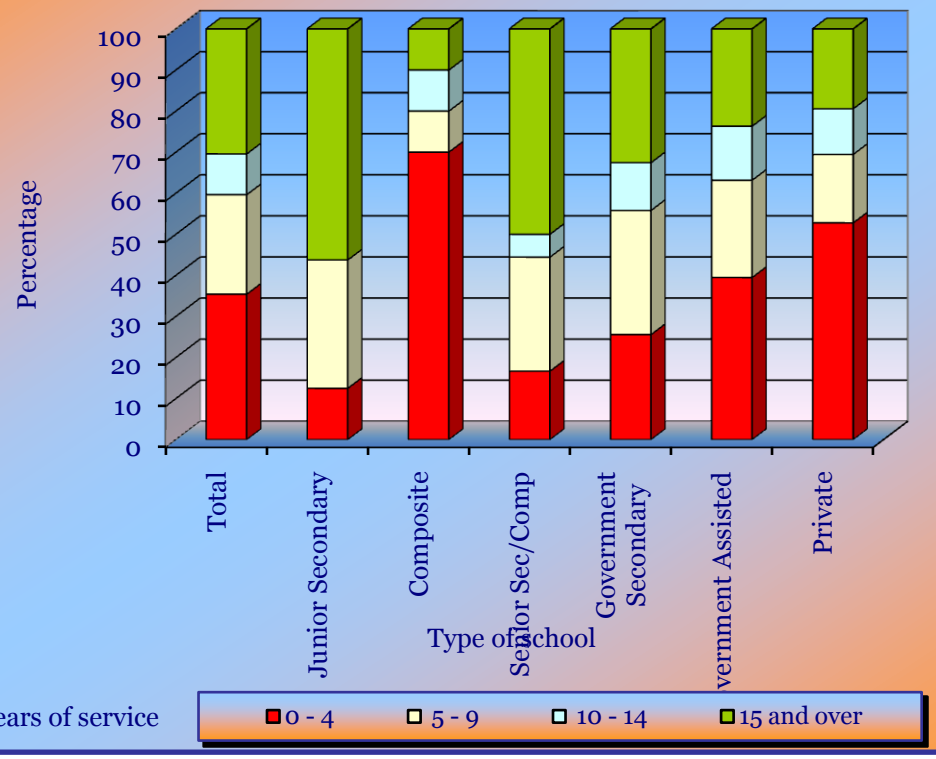
| Field of study | Type of school | | | | | | |
|---|---|---|---|---|---|---|---|
| | Total | Junior Sec | Composite | Senior Sec/Comp | Government Secondary | Government Assisted | Private |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Total | 100 | 9 | 5 | 16 | 25 | 34 | 11 |
| Mathematics | 100 | 4 | 9 | 16 | 29 | 33 | 9 |
| Computer Science | 100 | 0 | 17 | 0 | 33 | 50 | 0 |
| Natural Sciences | 100 | 13 | 0 | 31 | 13 | 38 | 6 |
| Agriculture | 100 | 0 | 0 | 0 | 0 | 0 | 100 |
| Engineering | 100 | 13 | 0 | 13 | 50 | 13 | 13 |
| Social Sciences | 100 | 33 | 0 | 33 | 0 | 0 | 33 |
| Education | 100 | 0 | 0 | 17 | 33 | 33 | 17 |
| Not stated | 100 | 33 | 0 | 0 | 0 | 67 | 0 |

The larger proportion of the teachers with a degree in mathematics was observed in government-assisted (33%) and government secondary schools (29%); a similar trend is shown for computer science.

## Table 9. Percentage of Teachers by Type of School and Years of Service

| Type of school | Years of service | | | | |
|---|---|---|---|---|---|
| | Total | 0 - 4 | 5 - 9 | 10 - 14 | 15 and over |
| | (1) | (2) | (3) | (4) | (5) |
| Total | 100 | 35 | 24 | 10 | 30 |
| Junior Secondary | 100 | 13 | 31 | 0 | 56 |
| Composite | 100 | 70 | 10 | 10 | 10 |
| Senior Sec/Comp | 100 | 17 | 28 | 6 | 50 |
| Government Secondary | 100 | 26 | 30 | 12 | 33 |
| Government Assisted | 100 | 39 | 24 | 13 | 24 |
| Private | 100 | 53 | 17 | 11 | 19 |

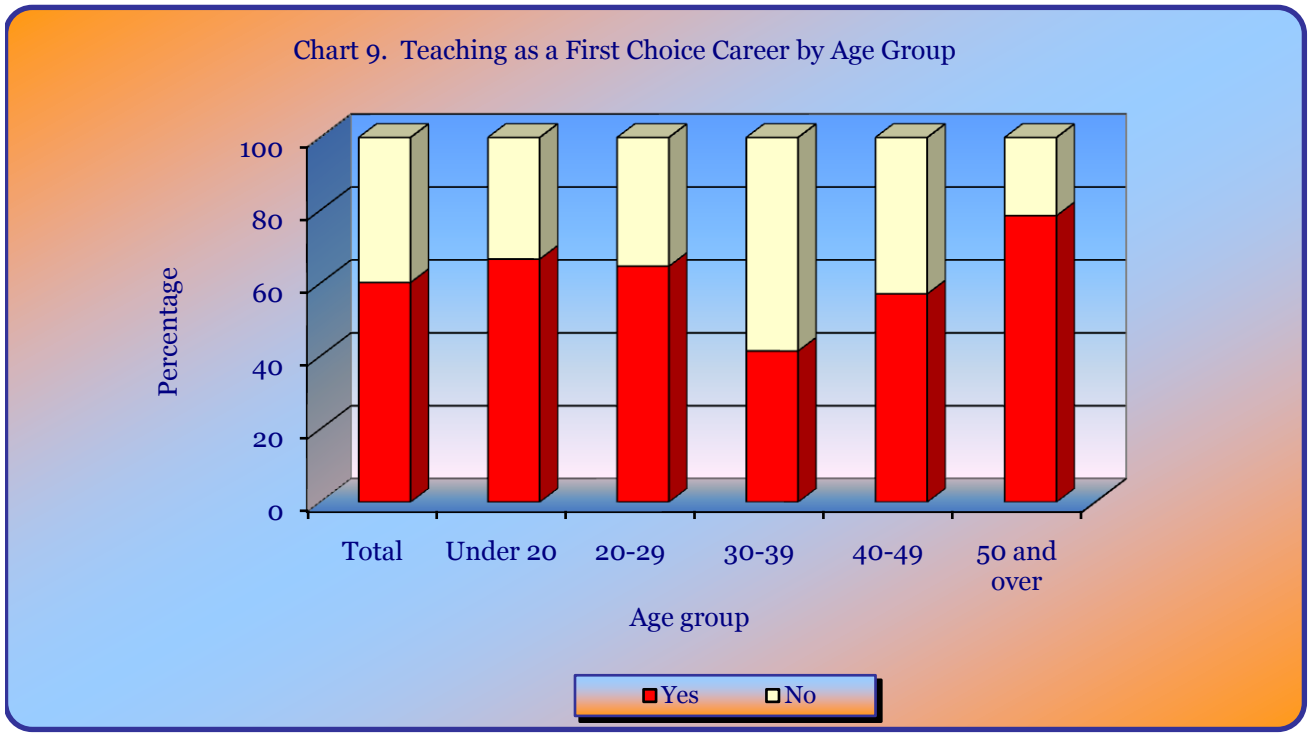
Chart 8. Percentage of Teachers by Type of School and Years of Service




The largest proportion (35%) of the sample of mathematics teachers reported service of 0-4 years while 30% indicated teaching experience of 15 years and over. A review of the data by type of school reveals that 56% of junior secondary and 50% of senior secondary/comprehensive school teachers had 15 and over years of service.

## Table 10. Teaching as a First Choice Career by Age Group

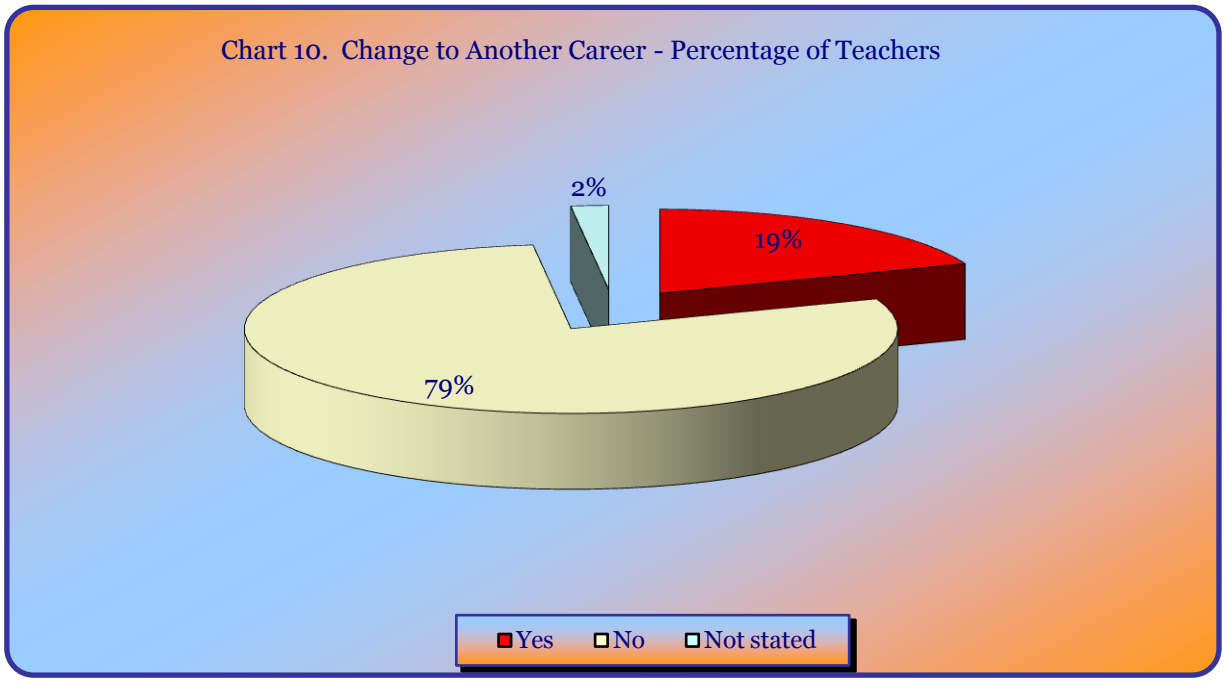
| Age group (years) | Teaching as a first choice career - percentage | | |
|---|---|---|---|
| | Total | Yes | No |
| | (1) | (2) | (3) |
| Total | 100 | 60 | 40 |
| Under 20 | 100 | 67 | 33 |
| 20-29 | 100 | 65 | 35 |
| 30-39 | 100 | 41 | 59 |
| 40-49 | 100 | 57 | 43 |
| 50 and over | 100 | 79 | 21 |




Overall, the majority of the mathematics teachers (60%) in secondary schools stated that teaching was their first choice as a career. This pattern was also reflected in the different age cohorts except the 30-39 age category where over fifty percent (59%) responded in the negative to teaching as a first choice career.

## Table 11. Teaching as a First Choice by Opportunity to Change to Another Career

| Teaching as a first choice career | Change to another career - percentage | | | |
|---|---|---|---|---|
| | Total | Yes | No | Not stated |
| | (1) | (2) | (3) | (4) |
| Total | 100 | 19 | 79 | 2 |
| Yes | 100 | 12 | 87 | 1 |
| No | 100 | 30 | 67 | 3 |




Over three-quarters (79%) of the teachers indicated that they were not desirous of changing to another career. The data also show that two-thirds (67%) who did not report teaching as their first choice of career were similarly disposed.

## Table 12. Attendance at Curriculum Workshops in Mathematics by Type of School

| Type of school | Attended - percentage | | |
|---|---|---|---|
| | Total | Yes | No |
| | (1) | (2) | (3) |
| Total | 100 | 32 | 68 |
| Junior Secondary | 100 | 50 | 50 |
| Composite | 100 | 50 | 50 |
| Senior Sec/Comp | 100 | 39 | 61 |
| Government Secondary | 100 | 30 | 70 |
| Government Assisted | 100 | 29 | 71 |
| Private | 100 | 22 | 78 |

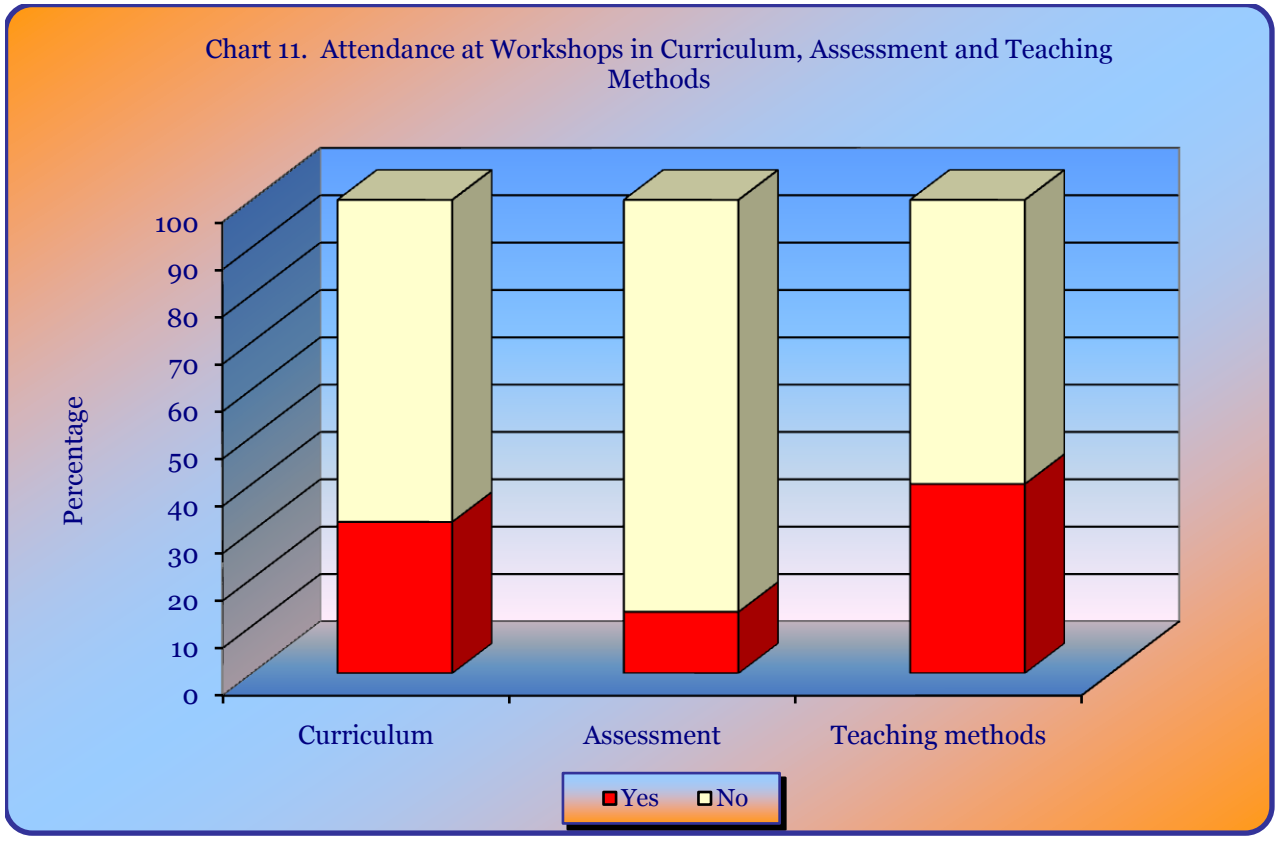
## Table 12a. Attendance at Assessment Workshops in Mathematics by Type of School

| Type of school | Attended - percentage | | |
|---|---|---|---|
| | Total | Yes | No |
| | (1) | (2) | (3) |
| Total | 100 | 13 | 87 |
| Junior Secondary | 100 | 31 | 69 |
| Composite | 100 | 10 | 90 |
| Senior Sec/Comp | 100 | 11 | 89 |
| Government Secondary | 100 | 16 | 84 |
| Government Assisted | 100 | 13 | 87 |
| Private | 100 | 3 | 97 |

## Table 12b. Attendance at Teaching Methods Workshops in Mathematics by Type of School

| Type of school | Attended - percentage | | |
|---|---|---|---|
| | Total | Yes | No |
| | | (2) | (3) |
| Total | 100 | 40 | 60 |
| Junior Secondary | 100 | 31 | 69 |
| Composite | 100 | 30 | 70 |
| Senior Sec/Comp | 100 | 44 | 56 |
| Government Secondary | 100 | 49 | 51 |
| Government Assisted | 100 | 42 | 58 |
| Private | 100 | 31 | 69 |

Table 12 shows, that of the sample of mathematics teachers, only one-third (32%) attended curriculum workshops in mathematics and a considerably smaller percentage (13%) was exposed to workshops in assessment (Table 12a). By comparison, attendance at workshops in teaching methods (40%) showed some improvement (Table 12b).

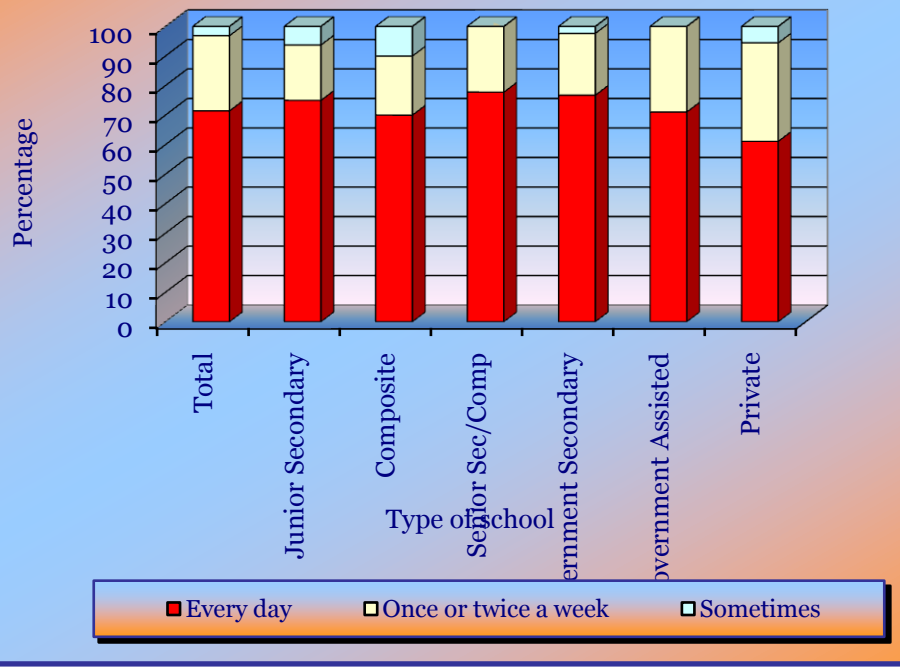



Source: Table 12

## Table 13. Assignment of Mathematics Homework by Type of School

| Type of school | Frequency of mathematics homework | | | |
|---|---|---|---|---|
| | Total | Every day | Once or twice a week | Sometimes |
| | (1) | (2) | (3) | (4) |
| | Percentage | | | |
| Total | 100 | 71 | 25 | 3 |
| Junior Secondary | 100 | 75 | 19 | 6 |
| Composite | 100 | 70 | 20 | 10 |
| Senior Sec/Comp | 100 | 78 | 22 | 0 |
| Government Secondary | 100 | 77 | 21 | 2 |
| Government Assisted | 100 | 71 | 29 | 0 |
| Private | 100 | 61 | 33 | 6 |

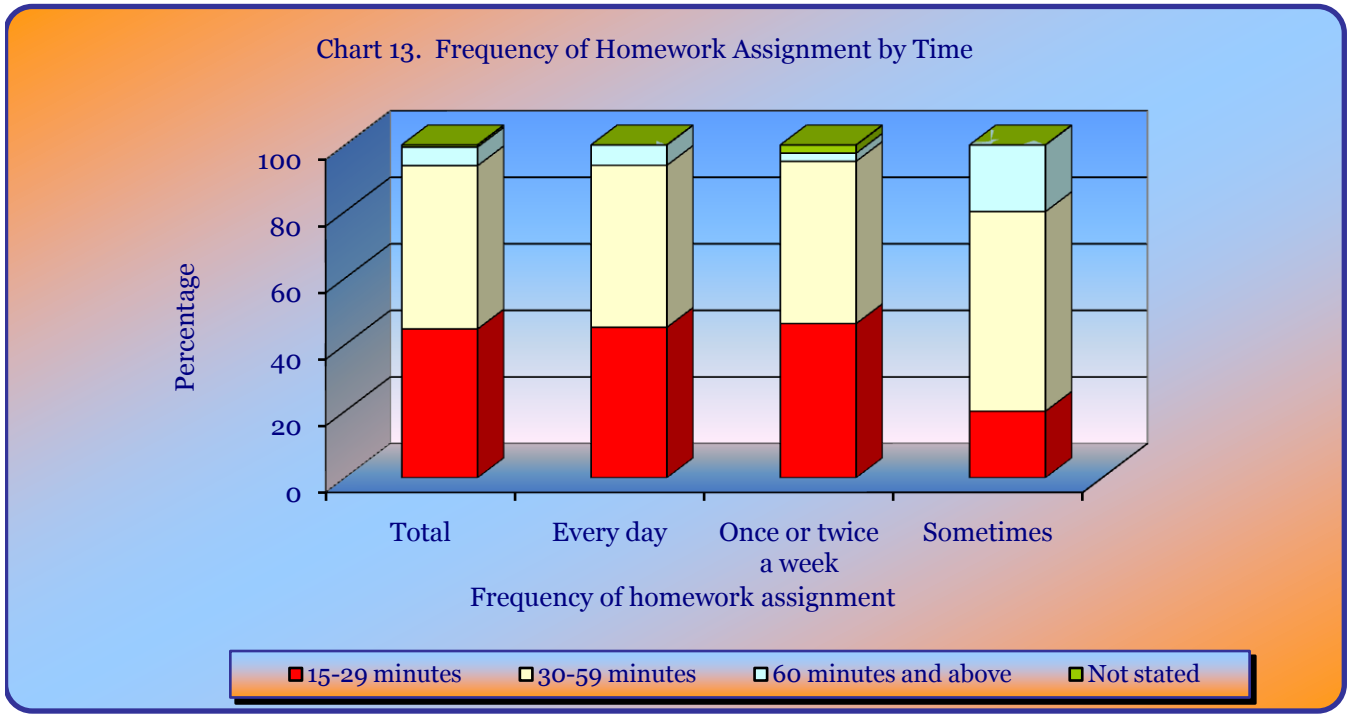
Chart 12. Assignment of Mathematics Homework by Type of School




A substantial percentage (71%) of teachers, especially in the state and state-assisted schools, assigned mathematics homework 'everyday' and a quarter (25%) did so ‘once or twice a week’.

## Table 14. Frequency of Homework Assignment by Time

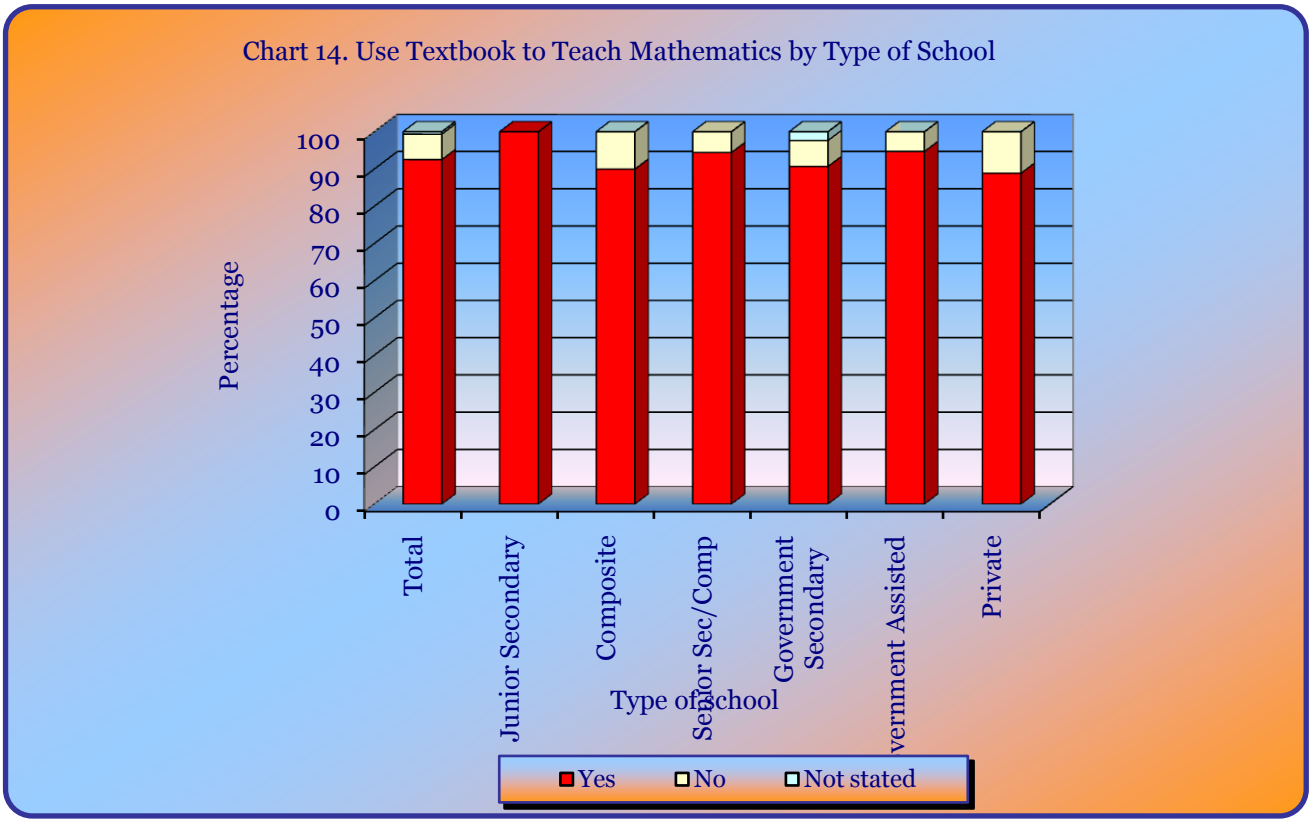
| Frequency of homework assignment | Duration of mathematics homework | | | | |
|---|---|---|---|---|---|
| | Total | 15-29 minutes | 30-59 minutes | 60 minutes and above | Not stated |
| | (1) | (2) | (3) | (4) | (5) |
| | Percentage | | | | |
| Total | 100 | 45 | 49 | 6 | 1 |
| Every day | 100 | 45 | 49 | 6 | 0 |
| Once or twice a week | 100 | 46 | 49 | 2 | 2 |
| Sometimes | 100 | 20 | 60 | 20 | 0 |




The table shows that the majority of teachers assigned mathematics homework of duration 30-59 minutes (49%) and 15-29 minutes (45%). When analysed by the frequency of 'everyday' and 'once a week' homework assignment, the data depict a similar pattern. When homework was assigned 'sometimes' three-fifths (60%) of such assignments were of duration 30 -59 minutes and one-fifth (20%), 60 minutes and over.

## Table 15. Use Textbook to Teach Mathematics by Type of School

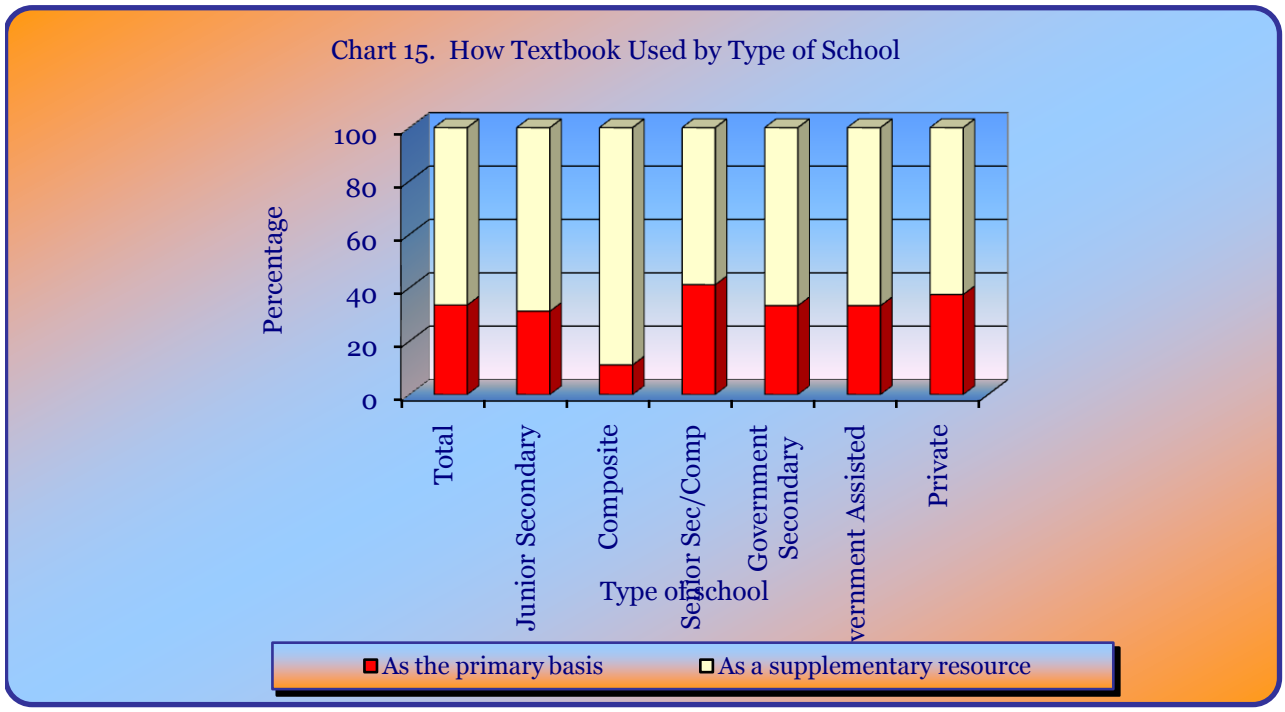
| Type of school | Use textbook to teach mathematics - percentage | | | |
|---|---|---|---|---|
| | Total | Yes | No | Not stated |
| | (1) | (2) | (3) | (4) |
| Total | 100 | 93 | 7 | 1 |
| Junior Secondary | 100 | 100 | 0 | 0 |
| Composite | 100 | 90 | 10 | 0 |
| Senior Sec/Comp | 100 | 94 | 6 | 0 |
| Government Secondary | 100 | 91 | 7 | 2 |
| Government Assisted | 100 | 95 | 5 | 0 |
| Private | 100 | 89 | 11 | 0 |




In general, a significant percentage (93%) of the teachers used textbooks to teach mathematics. All the junior secondary school teachers used textbooks.

## Table 16. How Textbook Used by Type of School

| Type of school | How textbook used - percentage | | |
|---|---|---|---|
| | Total | As the primary basis | As a supplementary resource |
| | (1) | (2) | (3) |
| Total | 100 | 34 | 66 |
| Junior Secondary | 100 | 31 | 69 |
| Composite | 100 | 11 | 89 |
| Senior Sec/Comp | 100 | 41 | 59 |
| Government Secondary | 100 | 33 | 67 |
| Government Assisted | 100 | 33 | 67 |
| Private | 100 | 38 | 63 |




Two-thirds (66%) of the teachers used textbooks as a supplementary resource compared to one-third (34%) as the primary basis for their lessons. Eighty-nine percent (89%) of the composite school teachers stated that textbooks were used as a supplementary resource.

## Table 17. Adequacy of Mathematics Textbooks

| Mathematics textbook | Adequate - percentage | | | |
|---|---|---|---|---|
| | Total | Yes | No | Not stated |
| | (1) | (2) | (3) | (4) |
| STP Maths for the Caribbean Series Book1-Book3 - Layne et.al | 100 | 54 | 42 | 4 |
| Success in Maths for the Caribbean Series Book1-Book3 - Foster et.al | 100 | 22 | 78 | 0 |
| Mathematics for Caribbean Schools Series Book1-Book4 - Foster & Tomlinson | 100 | 69 | 31 | 0 |
| New Secondary Mathematics for Caribbean Schools Book3 - Seng & Keong | 100 | 89 | 11 | 0 |
| Mathematics A Complete Course with CXC Questions - R. Toolsie | 100 | 54 | 46 | 0 |
| Oxford Mathematics for the Caribbean for CXC Book4 - Goldberg & King | 100 | 83 | 17 | 0 |
| Certificate Mathematics A Revision Course for the Caribbean - Greer & Layne | 100 | 43 | 43 | 14 |

The table above presents a summary of the popular mathematics textbooks used by the sample of secondary schools teachers. A substantial proportion (42%) of teachers stated that STP Maths for the Caribbean Series Book1 - Book3, the most popular texts, were inadequate for teaching mathematics. The highest percentage (78%) of inadequacy was recorded by the teachers who used the Success in Maths for the Caribbean Series Book1 - Book3. However, a significant percentage of the teachers who used the New Secondary Mathematics for Caribbean Schools Book3 (89%) and the Oxford Mathematics for the Caribbean for CXC Book4 (83%) stated that these texts were adequate for teaching mathematics.

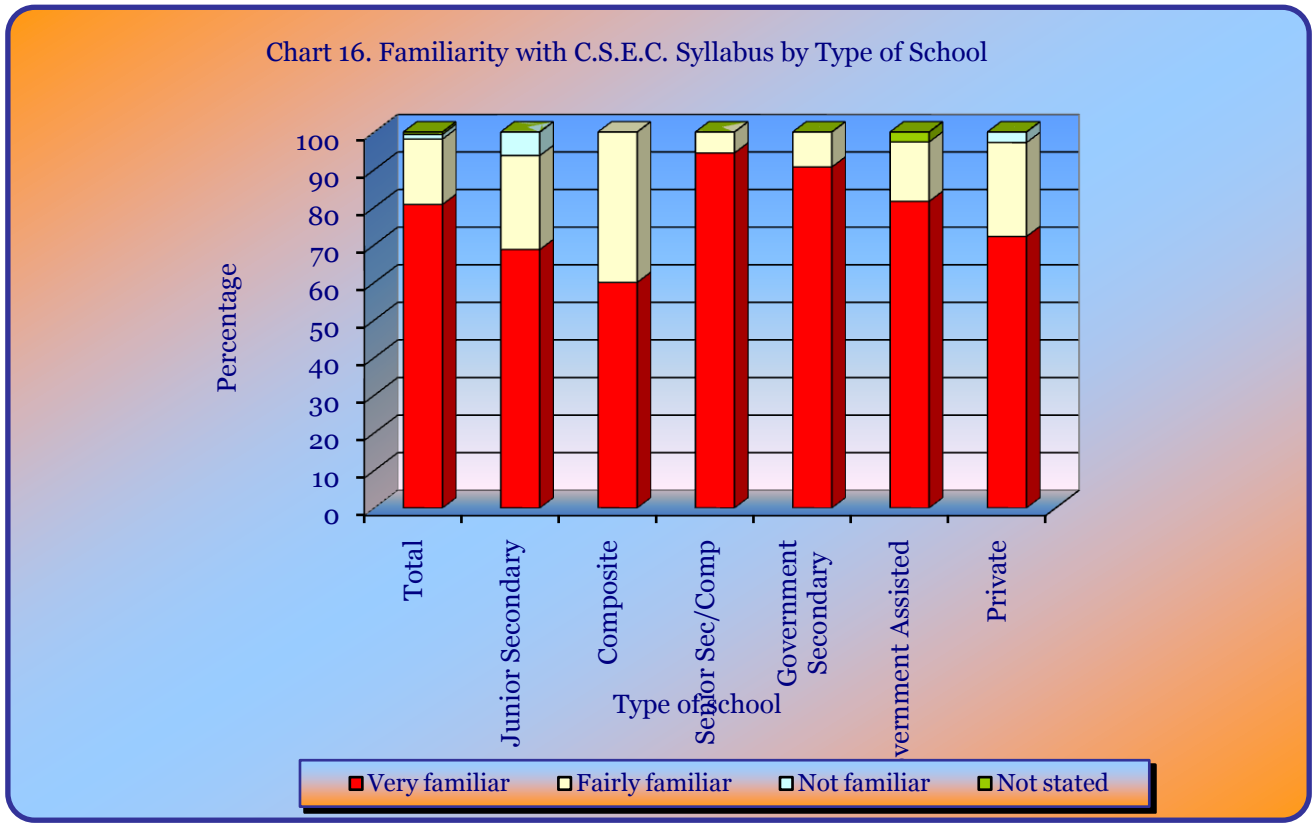
## Table 18. Familiarity with National Curriculum by Type of School

| Type of school | Percentage of teachers | | | | |
|---|---|---|---|---|---|
| | Total | Very familiar | Fairly familiar | Not familiar | Not stated |
| | (1) | (2) | (3) | (4) | (5) |
| Total | 100 | 35 | 45 | 17 | 3 |
| Junior Secondary | 100 | 69 | 25 | 6 | 0 |
| Composite | 100 | 0 | 70 | 30 | 0 |
| Senior Sec/Comp | 100 | 33 | 39 | 28 | 0 |
| Government Secondary | 100 | 28 | 58 | 12 | 2 |
| Government Assisted | 100 | 34 | 42 | 18 | 5 |
| Private | 100 | 39 | 36 | 19 | 6 |

A relatively large percentage (45%) of the teachers who participated in the survey indicated that they were 'fairly familiar' with the national curriculum while one-third (35%) was 'very familiar'. A review of the data by type of school shows that the junior secondary school teachers were mostly familiar with the national curriculum as two-thirds (69%) were 'very familiar' and a quarter (25%) 'fairly familiar'.

## Table 19. Familiarity with C.S.E.C. Syllabus by Type of School

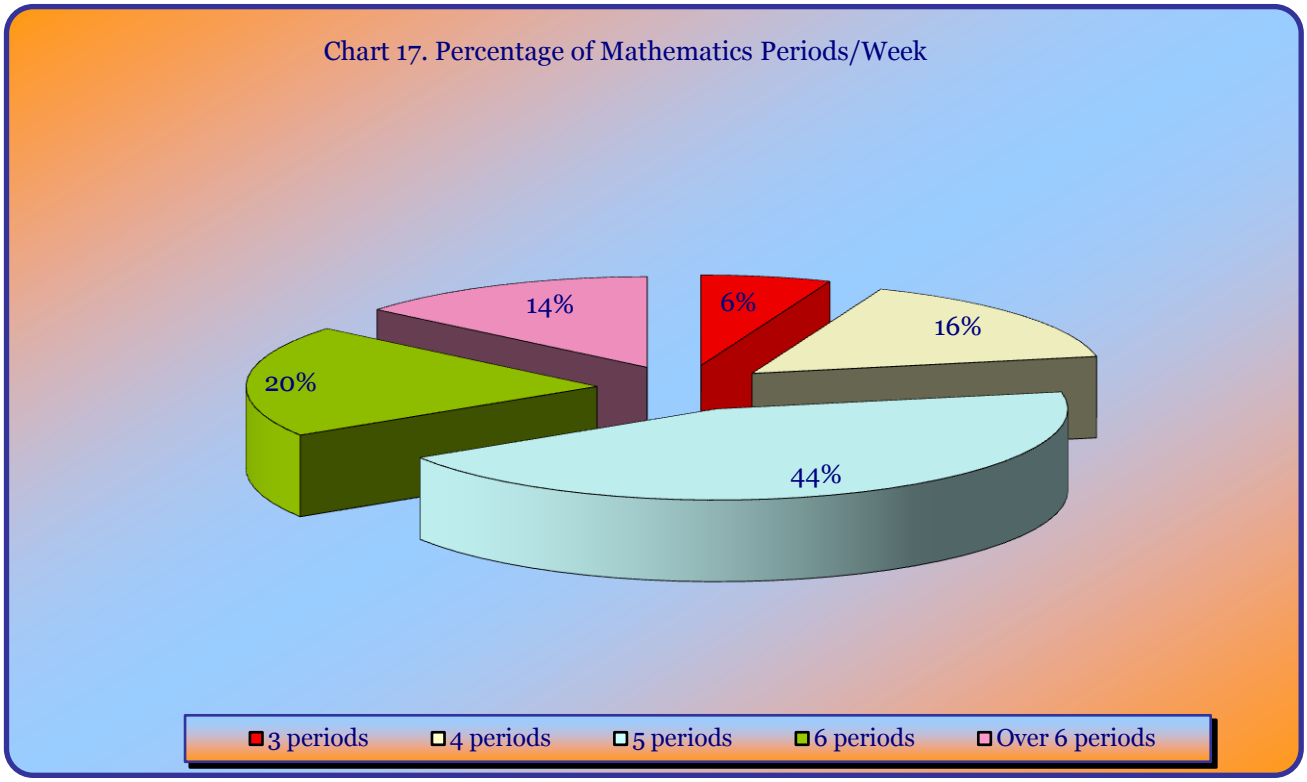
| Type of school | Percentage of teachers | | | | |
|---|---|---|---|---|---|
| | Total | Very familiar | Fairly familiar | Not familiar | Not stated |
| | (1) | (2) | (3) | (4) | (5) |
| Total | 100 | 81 | 17 | 1 | 1 |
| Junior Secondary | 100 | 69 | 25 | 6 | 0 |
| Composite | 100 | 60 | 40 | 0 | 0 |
| Senior Sec/Comp | 100 | 94 | 6 | 0 | 0 |
| Government Secondary | 100 | 91 | 9 | 0 | 0 |
| Government Assisted | 100 | 82 | 16 | 0 | 3 |
| Private | 100 | 72 | 25 | 3 | 0 |




Familiarity with the C.S.E.C. syllabus was quite high amongst the mathematics teachers in the various types of state and private secondary schools. Four-fifths (81%) of the sample of teachers stated that they were 'very familiar' and 17% were 'fairly familiar' with the C.S.E.C. syllabus.

## Table 20. Number of Mathematics Periods/Week

| No. of mathematics periods/week | Percentage of teachers |
|---|---|
| Total | 100 |
| 3 periods | 6 |
| 4 periods | 16 |
| 5 periods | 44 |
| 6 periods | 20 |
| Over 6 periods | 14 |

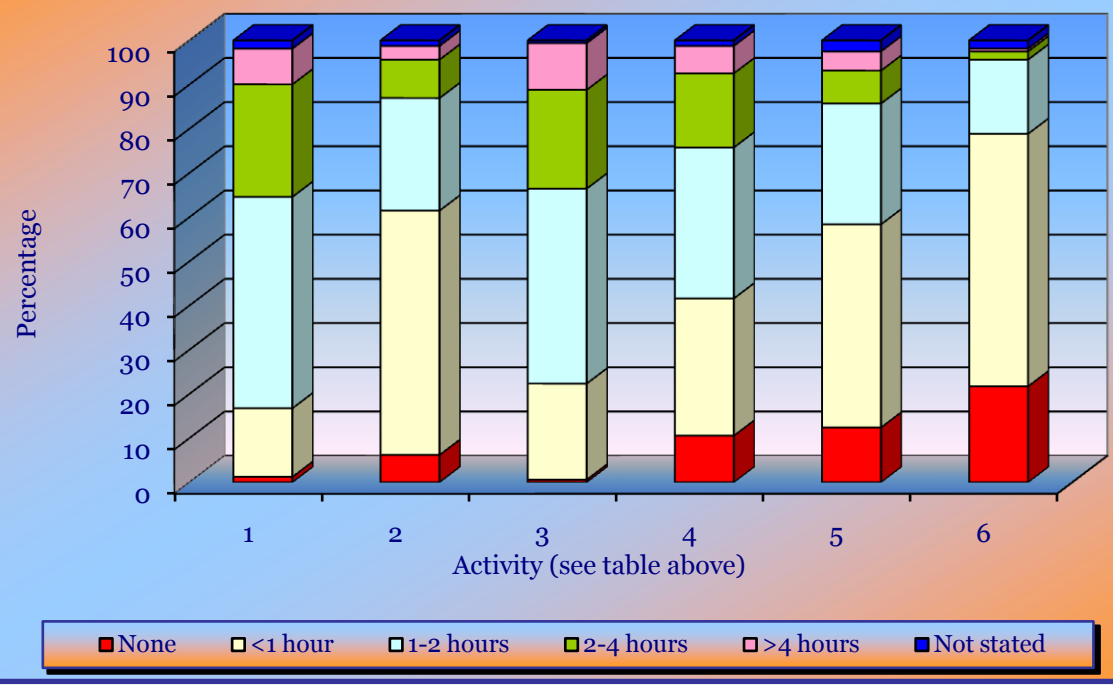



The majority (44%) of teachers taught mathematics for five periods in a week.

## Table 21. Time Spent on Teaching Activities Outside the Formal School Day

| Activity | Time spent | | | | | | |
|---|---|---|---|---|---|---|---|
| | Total | None | <1 hour | 1-2 hours | 2-4 hours | >4 hours | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| | Percentage | | | | | | |
| 1 Preparing or grading student tests or exams | 100 | 1 | 16 | 48 | 25 | 8 | 2 |
| 2 Meeting with students outside of classroom time | 100 | 6 | 55 | 25 | 9 | 3 | 1 |
| 3 Planning lessons by yourself | 100 | 1 | 22 | 44 | 22 | 11 | 1 |
| 4 Professional reading and development | 100 | 11 | 31 | 34 | 17 | 6 | 1 |
| 5 Administrative tasks including staff meeting | 100 | 12 | 46 | 27 | 7 | 4 | 2 |
| 6 Meeting with parents | 100 | 22 | 57 | 17 | 2 | 1 | 2 |

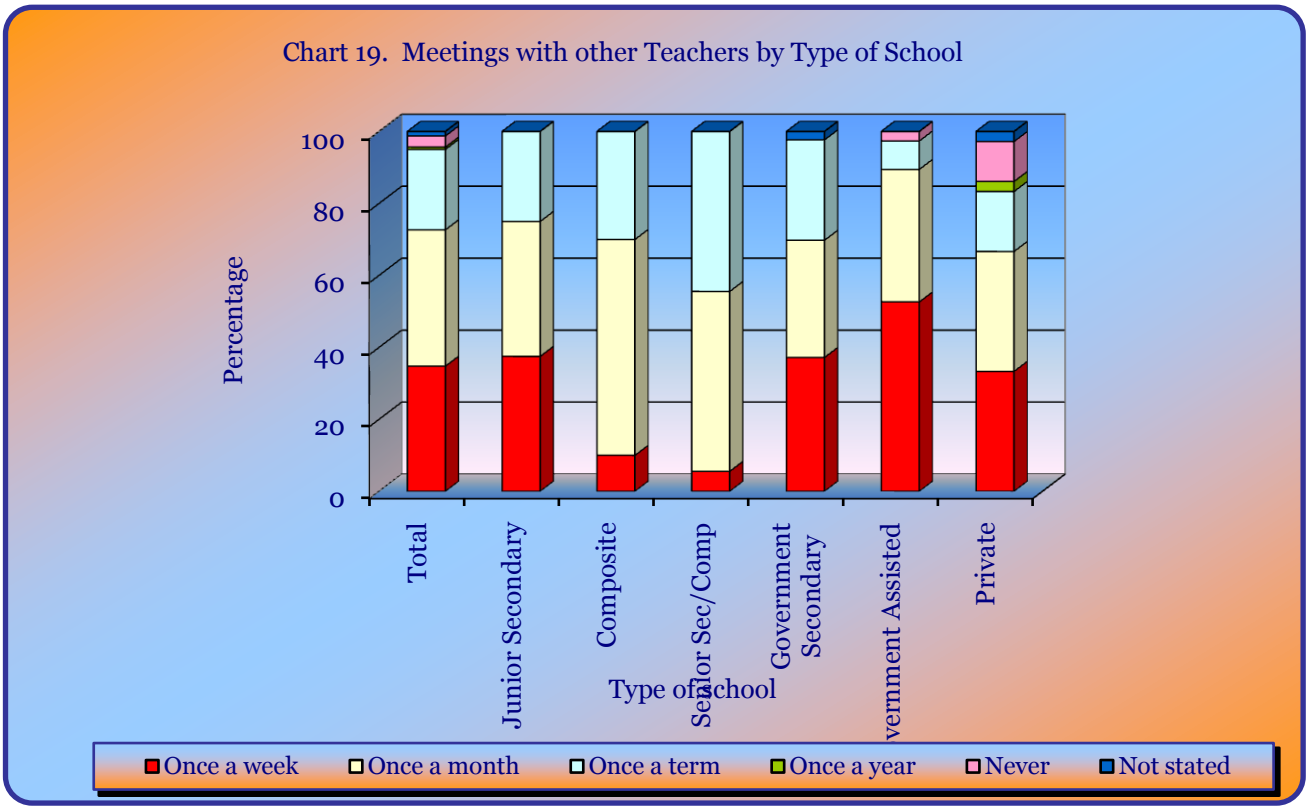
Chart 18. Time Spent on Teaching Activities Outside the Formal School Day




The table shows that, of the above activities, teachers devoted more time to 'planning lessons by yourself' and 'preparing or grading student tests or exams'. Least time was spent 'meeting with parents'. Over one-half (55%) of the sample surveyed spent less than one hour 'meeting with students outside of classroom time'. Approximately one-third (34%) of the teachers spent 1-2 hours and less than one hour (31%) on 'professional reading and development'; 11% spent no time.

## Table 22. Meetings with other Teachers by Type of School

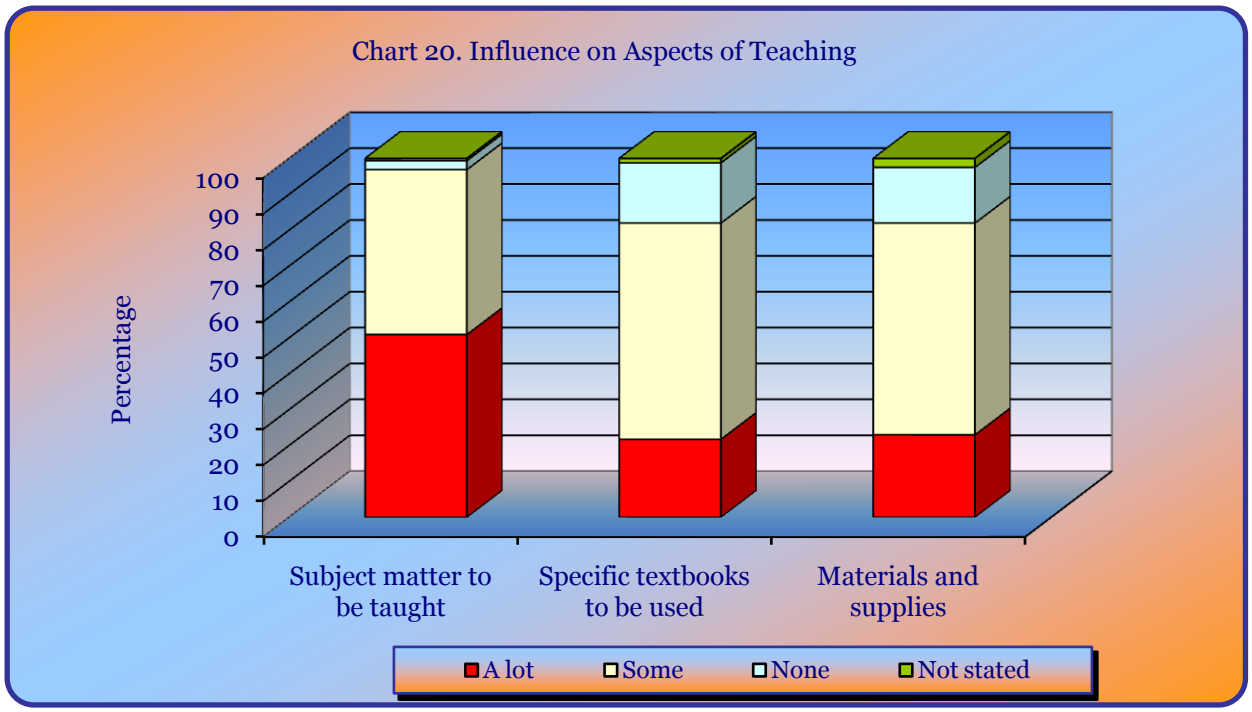
| Type of school | Frequency of meetings | | | | | | |
|---|---|---|---|---|---|---|---|
| | Total | Once a week | Once a month | Once a term | Once a year | Never | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| | Percentage | | | | | | |
| Total | 100 | 35 | 38 | 22 | 1 | 3 | 1 |
| Junior Secondary | 100 | 38 | 38 | 25 | 0 | 0 | 0 |
| Composite | 100 | 10 | 60 | 30 | 0 | 0 | 0 |
| Senior Sec/Comp | 100 | 6 | 50 | 44 | 0 | 0 | 0 |
| Government Secondary | 100 | 37 | 33 | 28 | 0 | 0 | 2 |
| Government Assisted | 100 | 53 | 37 | 8 | 0 | 3 | 0 |
| Private | 100 | 33 | 33 | 17 | 3 | 11 | 3 |




Over one-third of the sample of secondary school mathematics teachers attended monthly (38%) and weekly (35%) meetings with other teachers in their subject area to discuss and plan curriculum or teaching approaches. A further review of the data by type of school indicates that teachers in government-assisted schools attended meetings more frequently than their counterparts in the other types of school; 53% and 37% attended weekly and monthly meetings respectively.

## Table 23. Influence on Aspects of Teaching

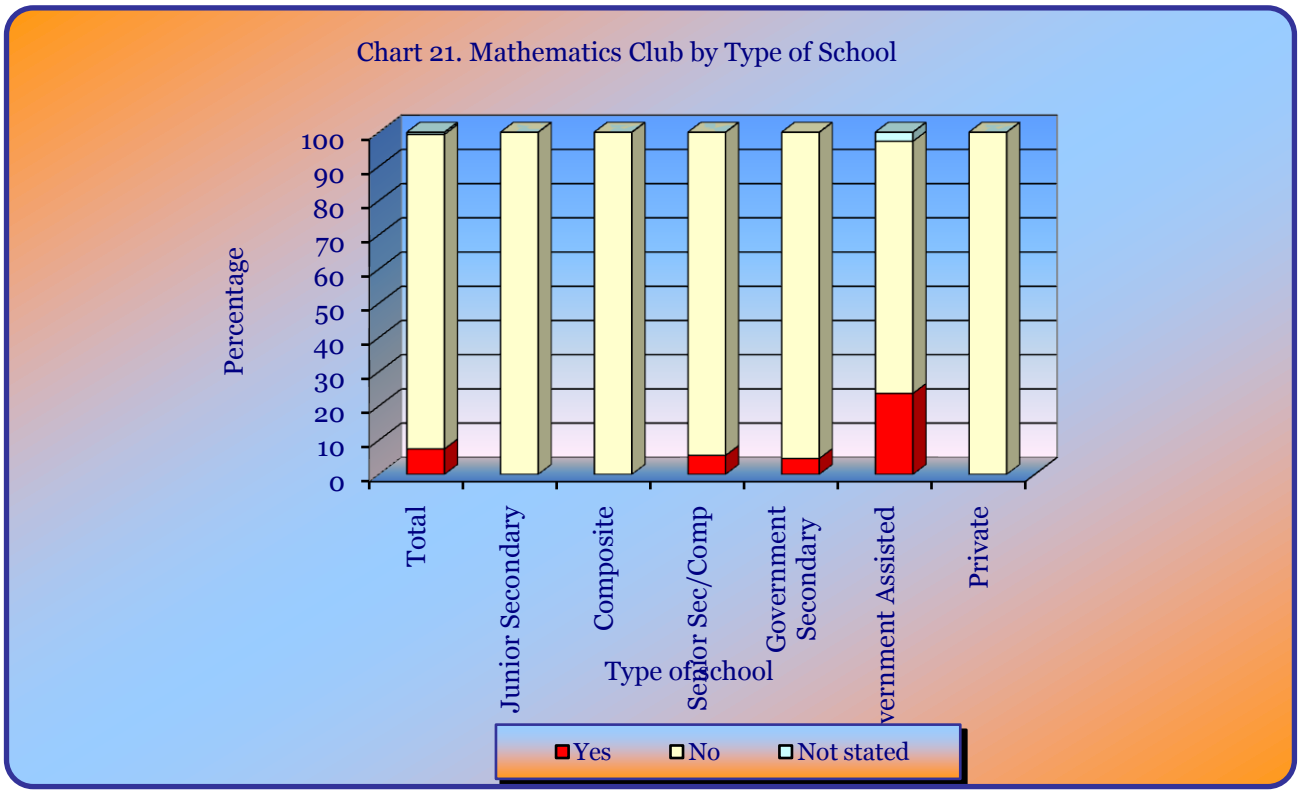
| Aspect | Influence | | | | |
|---|---|---|---|---|---|
| | Total | A lot | Some | None | Not stated |
| | (1) | (2) | (3) | (4) | (5) |
| | Percentage | | | | |
| Subject matter to be taught | 100 | 51 | 46 | 2 | 1 |
| Specific textbooks to be used | 100 | 22 | 60 | 17 | 1 |
| Materials and supplies | 100 | 23 | 59 | 16 | 2 |




The data reveal that the mathematics teachers surveyed had 'a lot' (51%) and 'some' (46%) influence on the subject matter to be taught. However, by comparison, teachers' influence declined on the acquisition of specific textbooks, materials and supplies.

## Table 24. Mathematics Club by Type of School

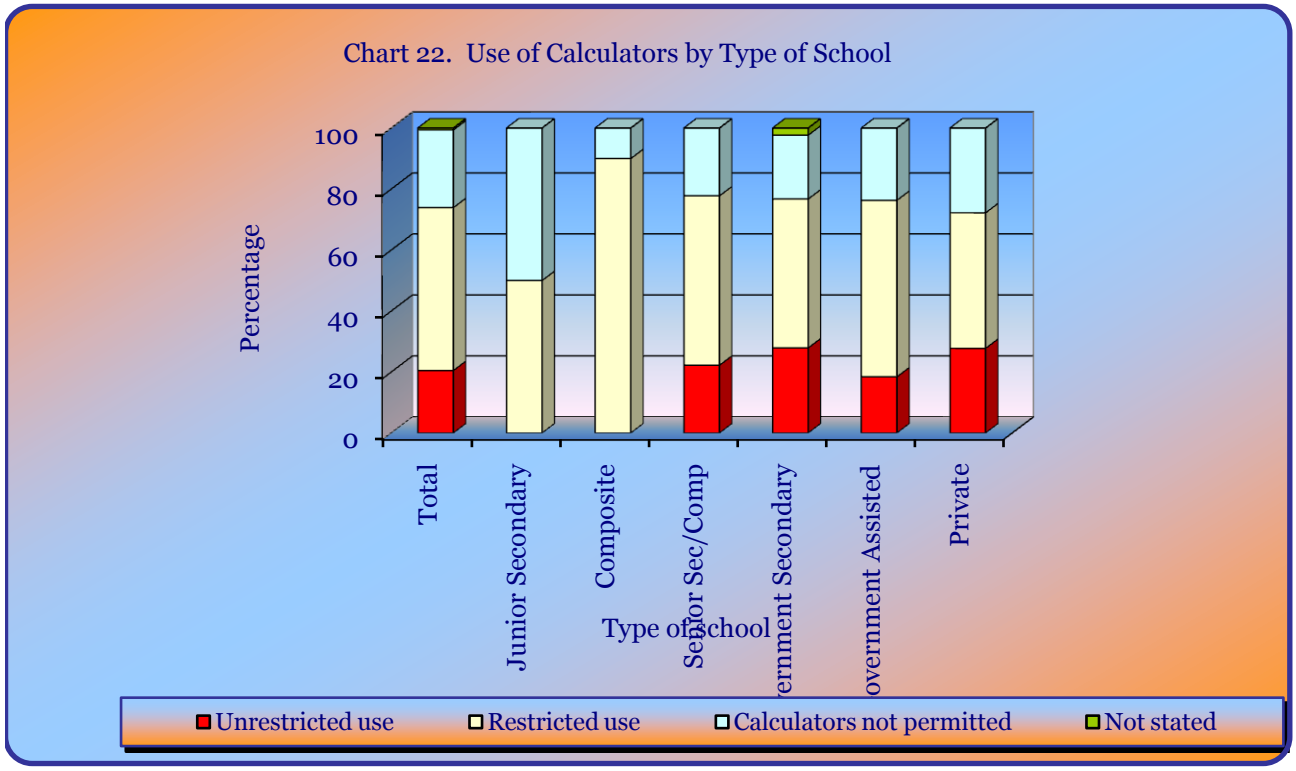
| Type of school | School with mathematics club | | | |
|---|---|---|---|---|
| | Total | Yes | No | Not stated |
| | (1) | (2) | (3) | (4) |
| | Percentage | | | |
| Total | 100 | 7 | 92 | 1 |
| Junior Secondary | 100 | 0 | 100 | 0 |
| Composite | 100 | 0 | 100 | 0 |
| Senior Sec/Comp | 100 | 6 | 94 | 0 |
| Government Secondary | 100 | 5 | 95 | 0 |
| Government Assisted | 100 | 24 | 74 | 3 |
| Private | 100 | 0 | 100 | 0 |




Over ninety percent (92%) of the teachers reported that their schools had no mathematics club. By type of school, the state-assisted institutions were identified with the highest percentage (24%) of mathematics clubs.

## Table 25. Use of Calculators by Type of School

| Type of school | Use of calculators - percentage | | | | |
|---|---|---|---|---|---|
| | Total | Unrestricted use | Restricted use | Calculators not permitted | Not stated |
| | (1) | (2) | (3) | (4) | (5) |
| | Percentage | | | | |
| Total | 100 | 20 | 53 | 25 | 1 |
| Junior Secondary | 100 | 0 | 50 | 50 | 0 |
| Composite | 100 | 0 | 90 | 10 | 0 |
| Senior Sec/Comp | 100 | 22 | 56 | 22 | 0 |
| Government Secondary | 100 | 28 | 49 | 21 | 2 |
| Government Assisted | 100 | 18 | 58 | 24 | 0 |
| Private | 100 | 28 | 44 | 28 | 0 |

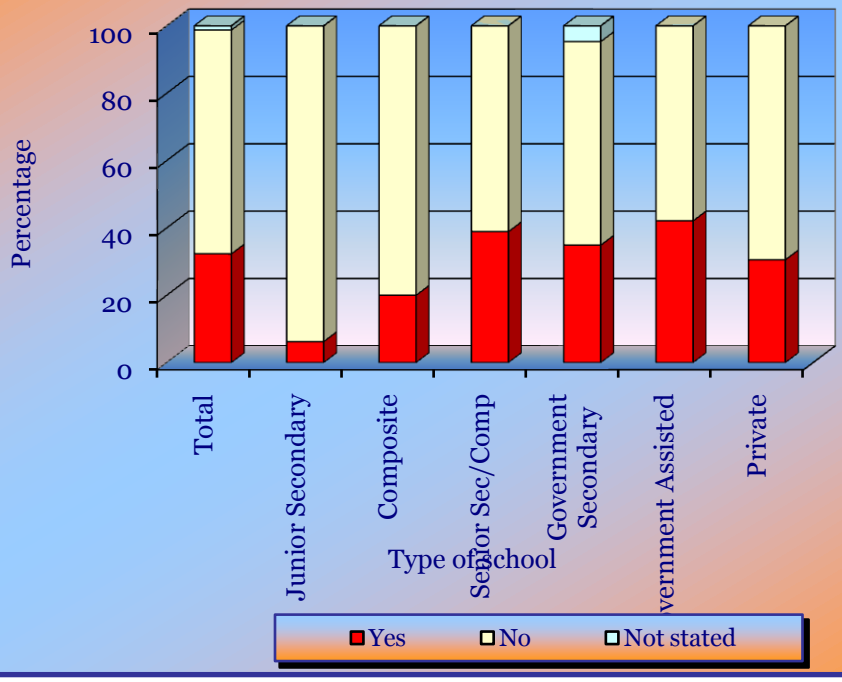



One-half of the teachers (53%) reported 'restricted' use of calculators by students while one-quarter (25%) stated 'calculators not permitted'.

## Table 26. Computers Available for Use in Mathematics by Type of School

| Type of school | Computers for use in mathematics | | | |
|---|---|---|---|---|
| | Total | Yes | No | Not stated |
| | (1) | (2) | (3) | (4) |
| | Percentage | | | |
| Total | 100 | 32 | 66 | 1 |
| Junior Secondary | 100 | 6 | 94 | 0 |
| Composite | 100 | 20 | 80 | 0 |
| Senior Sec/Comp | 100 | 39 | 61 | 0 |
| Government Secondary | 100 | 35 | 60 | 5 |
| Government Assisted | 100 | 42 | 58 | 0 |
| Private | 100 | 31 | 69 | 0 |

Chart 23. Computers Available for Use in Mathematics by Type of School

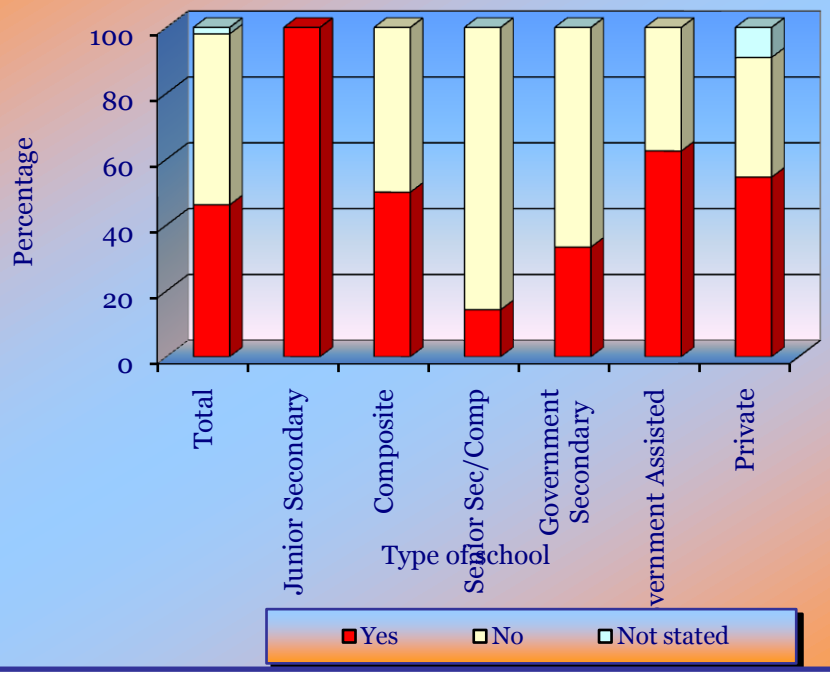



Two-thirds (66%) of the teachers indicated that computers were not available for use in mathematics by students. The data also show that the highest percentage of computers available for use in mathematics was recorded in government-assisted (42%) and senior secondary/comprehensive schools (39%). Less than ten percent (6%) of the junior secondary school teachers indicated that there were computers available for use.

## Table 27. Access to Internet for Mathematics by Type of School

| Type of school | Access to internet | | | |
|---|---|---|---|---|
| | Total | Yes | No | Not stated |
| | (1) | (2) | (3) | (4) |
| | Percentage | | | |
| Total | 100 | 46 | 52 | 2 |
| Junior Secondary | 100 | 100 | 0 | 0 |
| Composite | 100 | 50 | 50 | 0 |
| Senior Sec/Comp | 100 | 14 | 86 | 0 |
| Government Secondary | 100 | 33 | 67 | 0 |
| Government Assisted | 100 | 63 | 38 | 0 |
| Private | 100 | 55 | 36 | 9 |

Chart 24. Access to Internet for Mathematics by Type of School




Of the percentage of computers available for use, 46% had access to the internet for mathematics. Fifty percent and more of the sample of teachers in most schools indicated that students had access to the internet.

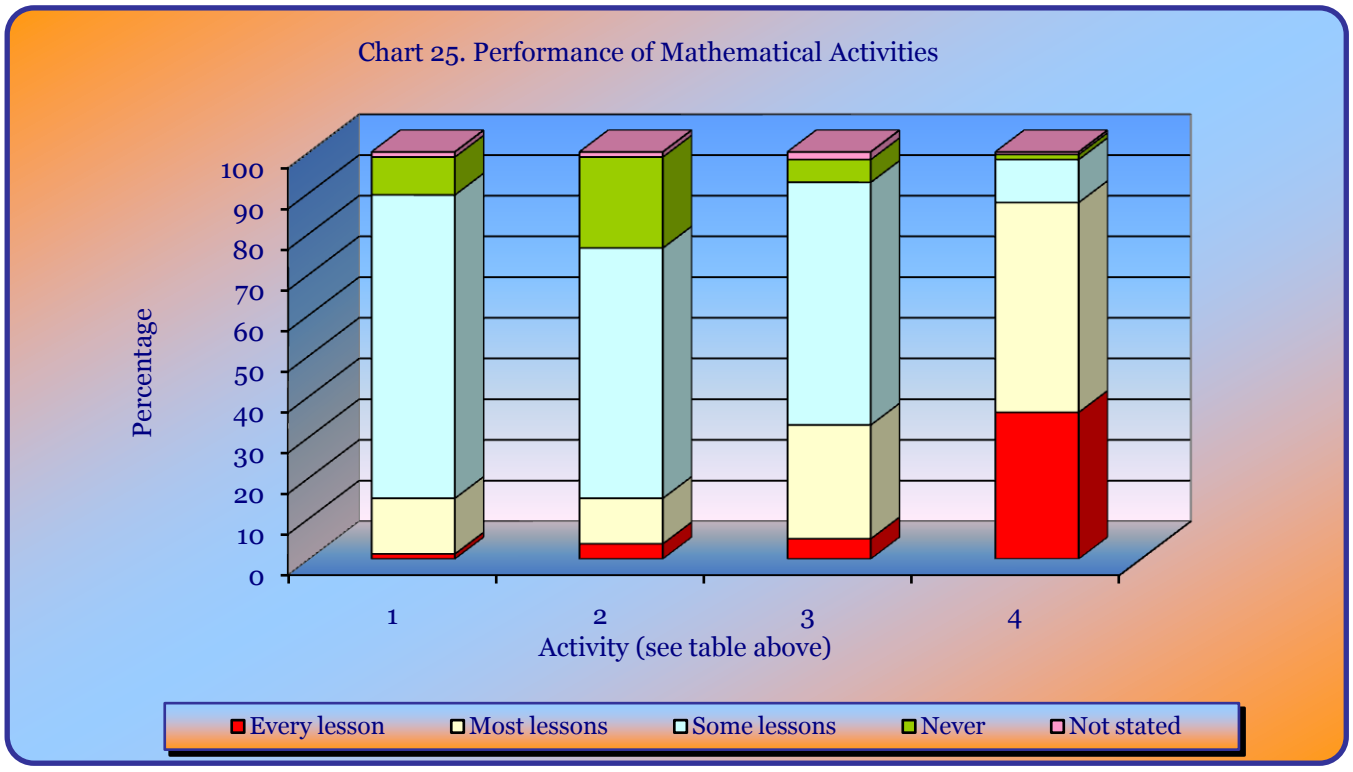
## Table 28. Use the Internet as a Teaching Resource by Type of School

| Type of school | Use internet as a teaching resource | | | | |
|---|---|---|---|---|---|
| | Total | A great deal | Quite a lot | A little | Not at all |
| | (1) | (2) | (3) | (4) | (5) |
| | Percentage | | | | |
| Total | 100 | 2 | 10 | 38 | 50 |
| Junior Secondary | 100 | 0 | 100 | 0 | 0 |
| Composite | 100 | 0 | 0 | 50 | 50 |
| Senior Sec/Comp | 100 | 0 | 29 | 0 | 71 |
| Government Secondary | 100 | 7 | 0 | 40 | 53 |
| Government Assisted | 100 | 0 | 13 | 50 | 38 |
| Private | 100 | 0 | 0 | 45 | 55 |

One-half (50%) of the secondary school mathematics teachers who participated in the survey indicated that they did not use the internet as a teaching resource while 38% used it 'a little'.

## Table 29. Performance of Mathematical Activities

| Activity | Frequency of activity | | | | | |
|---|---|---|---|---|---|---|
| | Total | Every lesson | Most lessons | Some lessons | Never | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Percentage | | | | | |
| 1 Represent and analyse relationships using tables, charts, or graphs | 100 | 1 | 14 | 75 | 9 | 1 |
| 2 Work on problems for which there is no immediately obvious method of solution | 100 | 4 | 11 | 61 | 22 | 1 |
| 3 Write equations to represent relationships | 100 | 5 | 28 | 60 | 6 | 2 |
| 4 Practice computational skills | 100 | 36 | 52 | 11 | 1 | 1 |




The data reveal that the most frequently performed mathematical activity was the practice of computational skills at 'every lesson' (36%) and 'most lessons' (52%). One-fifth (22%) of the teachers indicated that the students in their mathematics class never worked on problems for which there was no immediately obvious method of solution.

## Table 30. Time Spent by Subject Area

| Teaching time spent | Subject area | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Algebra | Compu-tation | Consumer arithmetic | Statistics | Number theory | Geometry | Measure-ment | Relations, functions and graphs | Sets | Trigo-nom-etry |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) |
| | Percentage | | | | | | | | | |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| <10% | 7 | 17 | 33 | 50 | 37 | 25 | 37 | 35 | 45 | 52 |
| 10-19 % | 24 | 38 | 35 | 25 | 32 | 40 | 35 | 32 | 27 | 19 |
| 20-29 % | 28 | 14 | 5 | 1 | 6 | 9 | 2 | 7 | 4 | 5 |
| Over 30 % | 17 | 7 | 2 | 1 | 2 | 2 | 1 | 2 | 0 | 1 |
| Not stated | 23 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 | 24 |

The table shows that the highest percentage of teaching time spent was recorded for algebra, in which 28% and 17% of the teachers spent between 20-29% and over 30% of their teaching time respectively. A half of the teachers devoted less than 10% of their teaching time to trigonometry (52%) and statistics (50%).

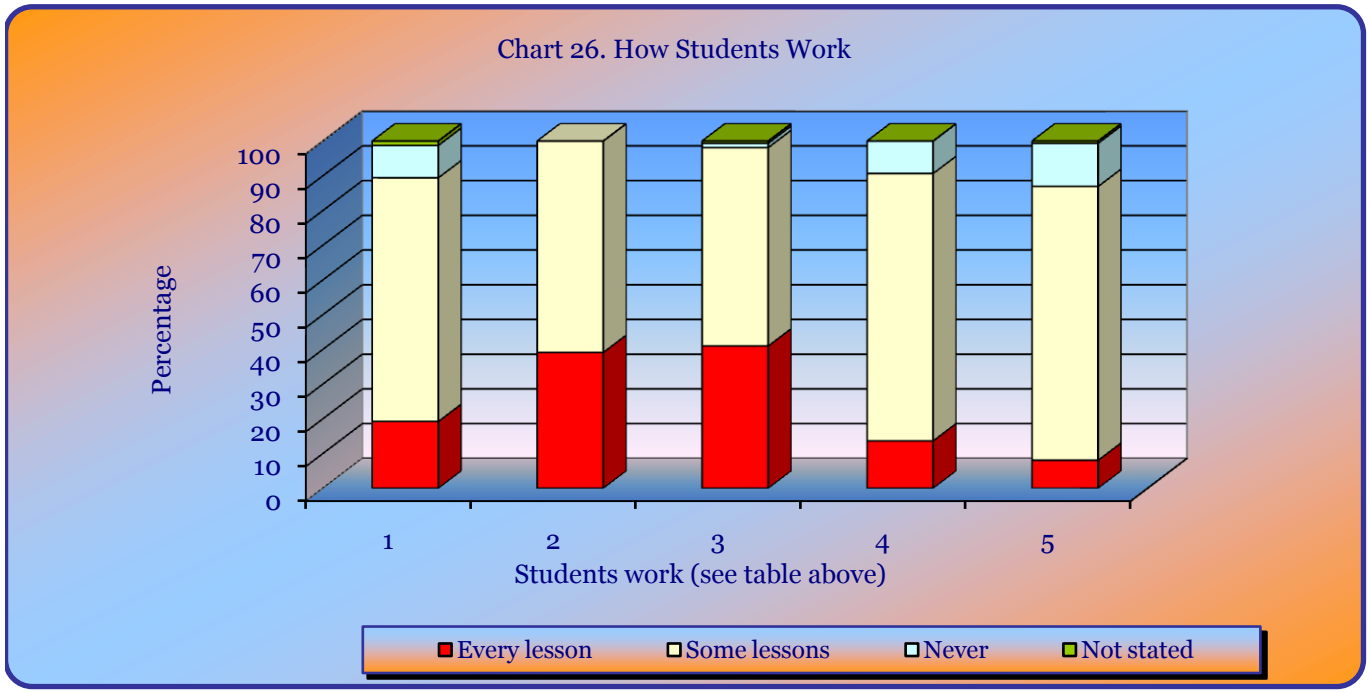
## Table 31. Most Difficult Subject Area for Students to Conceptualise by Form

| Subject area | Form | | | | |
|---|---|---|---|---|---|
| | Total | Form 1 | Form 2 | Form 3 | Form 4 |
| | (1) | (2) | (3) | (4) | (5) |
| | Percentage | | | | |
| Total | 100 | 100 | 100 | 100 | 100 |
| Algebra | 53 | 59 | 75 | 43 | 33 |
| Computation | 1 | 3 | 0 | 3 | 0 |
| Consumer Arithmetic | 1 | 0 | 2 | 3 | 0 |
| Statistics | 2 | 0 | 0 | 3 | 7 |
| Number Theory | 2 | 5 | 5 | 0 | 0 |
| Geometry | 11 | 8 | 2 | 16 | 19 |
| Measurement | 1 | 3 | 0 | 0 | 2 |
| Relations, Functions and Graphs | 7 | 8 | 5 | 11 | 7 |
| Sets | 2 | 3 | 2 | 0 | 2 |
| Trigonometry | 11 | 0 | 0 | 19 | 26 |
| Not stated | 7 | 11 | 9 | 3 | 5 |

The majority of teachers (53%) identified algebra as the most difficult area of the mathematics syllabus for students to conceptualise, followed by geometry (11%) and trigonometry (11%). The data reveal that the lower Forms 1 and 2, encountered more difficulty with algebra. A relatively large percentage of Form 4 (26%) and Form 3 (19%) teachers reported difficulty with trigonometry and similarly, geometry.

## Table 32. How Students Work

| | Students work | Frequency | | | | |
|---|---|---|---|---|---|---|
| | | Total | Every lesson | Some lessons | Never | Not stated |
| | | (1) | (2) | (3) | (4) | (5) |
| | | Percentage | | | | |
| 1 | Individually without assistance from the teacher | 100 | 19 | 70 | 9 | 1 |
| 2 | Individually with assistance from the teacher | 100 | 39 | 61 | 0 | 0 |
| 3 | Together as a class with the teacher teaching the whole class | 100 | 41 | 57 | 1 | 1 |
| 4 | Together as a class with responding to one another | 100 | 14 | 77 | 9 | 0 |
| 5 | In pairs or small groups | 100 | 8 | 79 | 12 | 1 |

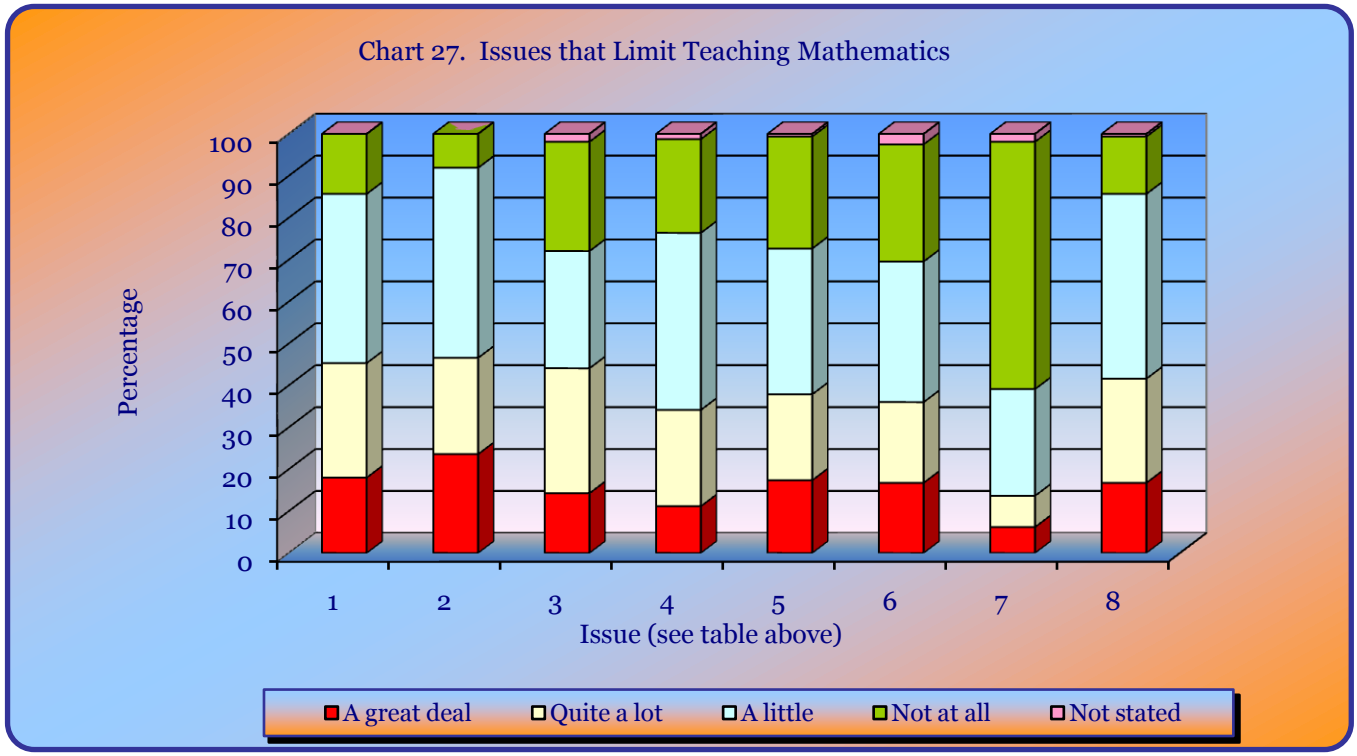



Approximately two-fifths of the teachers in each case indicated that students worked 'individually with assistance from the teacher' (39%) and 'together as a class with the teacher teaching the whole class' (41%) at 'every lesson', a continuation of the traditional method of teaching.

## Table 33. Issues that Limit Teaching Mathematics

| | Issue | Affect | | | | | |
|---|---|---|---|---|---|---|---|
| | | Total | A great deal | Quite a lot | A little | Not at all | Not stated |
| | | (1) | (2) | (3) | (4) | (5) | (6) |
| | | Percentage | | | | | |
| 1 | Students who come from a wide range of backgrounds | 100 | 18 | 27 | 40 | 14 | 0 |
| 2 | Disruptive students | 100 | 24 | 23 | 45 | 8 | 0 |
| 3 | Parents interested in their children's learning and progress | 100 | 14 | 30 | 28 | 26 | 2 |
| 4 | Shortage of other instructional equipment for students' use | 100 | 11 | 23 | 42 | 22 | 1 |
| 5 | High student/teacher ratio | 100 | 17 | 20 | 35 | 27 | 1 |
| 6 | Inadequate physical facilities | 100 | 17 | 19 | 34 | 28 | 2 |
| 7 | Threats to personal safety or the safety of students | 100 | 6 | 7 | 25 | 59 | 2 |
| 8 | Student absenteeism | 100 | 17 | 25 | 44 | 14 | 1 |

Chart 27. Issues that Limit Teaching Mathematics

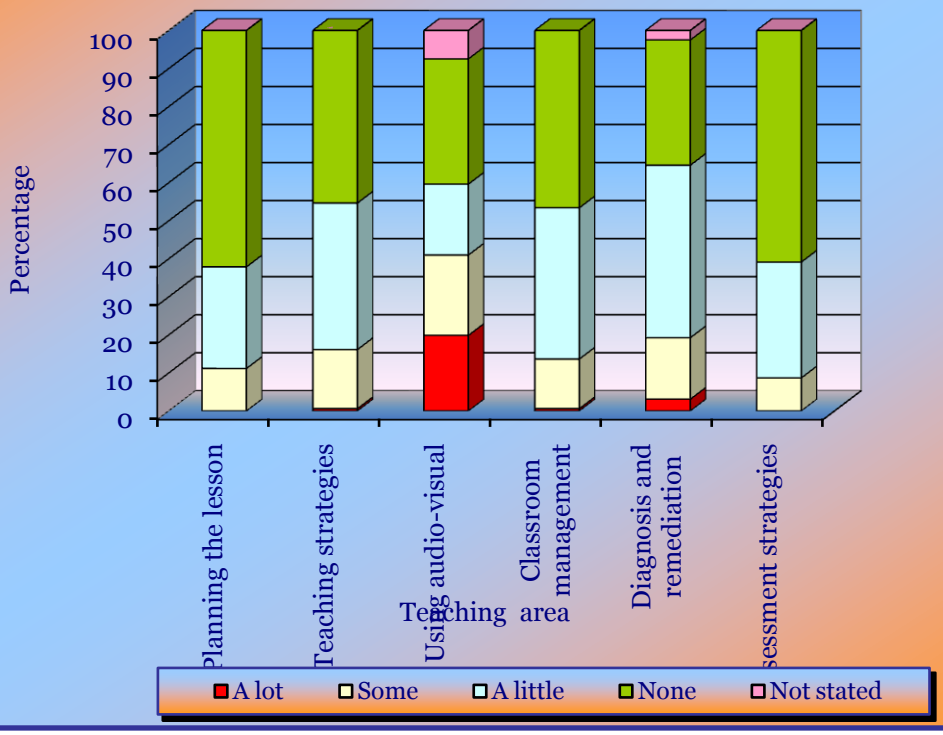



The table represents the sample of mathematics teachers' responses to issues that limited their teaching of the subject. The data reveal a substantial percentage of teachers reported 'a great deal' and 'quite a lot' for 'disruptive students' (47%), 'students who come from a wide range of backgrounds' (45%) 'parents interested in their children's learning and progress' (44%) and 'student absenteeism' (42%). A significant proportion (84%) of the teachers stated that threats to personal safety or the safety of students had little or no effect on the teaching of mathematics.

## Table 34. Identifying Difficulties in Teaching Areas

| Teaching area | Difficulty | | | | | |
|---|---|---|---|---|---|---|
| | Total | A lot | Some | A little | None | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Percentage | | | | | |
| Planning the lesson | 100 | 0 | 11 | 27 | 62 | 0 |
| Teaching strategies | 100 | 1 | 16 | 39 | 45 | 0 |
| Using audio-visual | 100 | 20 | 21 | 19 | 33 | 7 |
| Classroom management | 100 | 1 | 13 | 40 | 47 | 0 |
| Diagnosis and remediation | 100 | 3 | 16 | 45 | 33 | 2 |
| Assessment strategies | 100 | 0 | 9 | 30 | 61 | 0 |

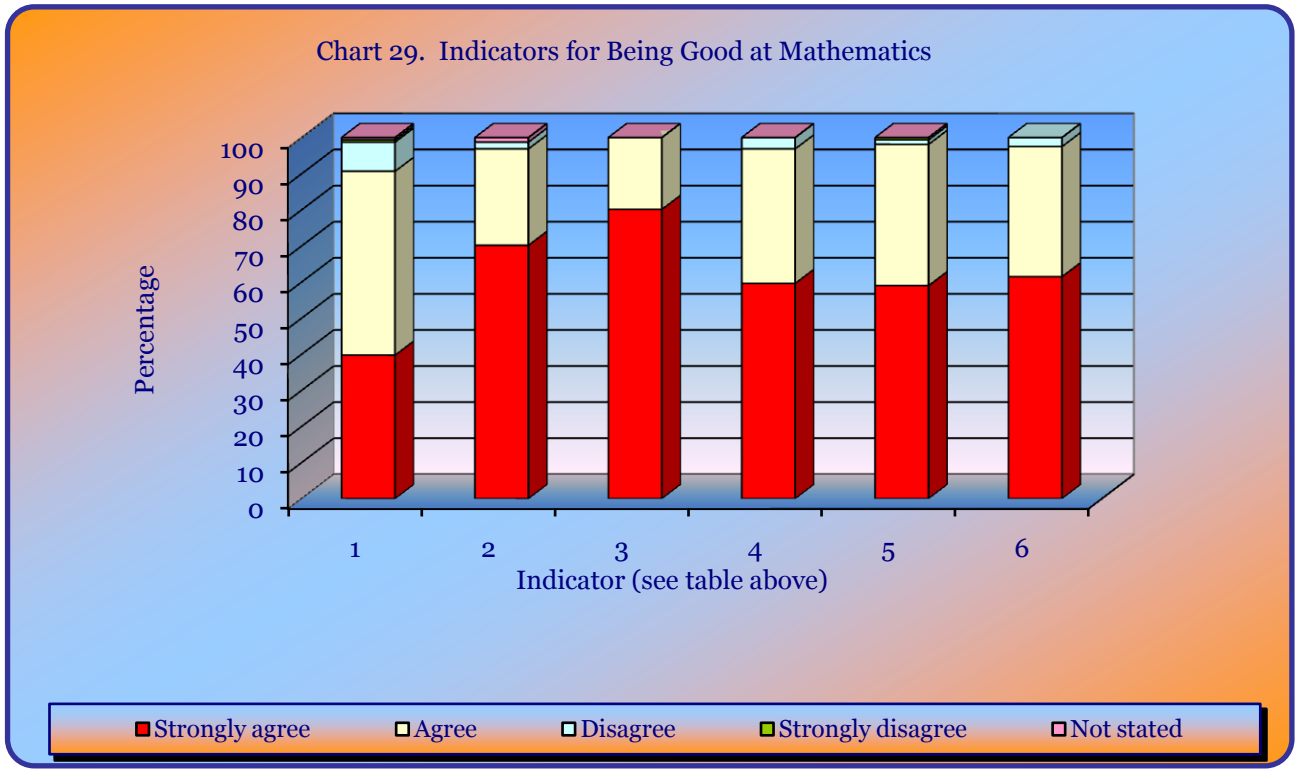
Chart 28. Identifying Difficulties in Teaching Areas




The data show that one-fifth (20%) of the sample of teachers experienced 'a lot' of difficulties using audio-visual equipment. The majority of teachers encountered 'a little' or no difficulty in the other teaching areas. Approximately three-fifths of the mathematics teachers reported no difficulty in planning lessons (62%) and assessment strategies (61%).

## Table 35. Indicators for Being Good at Mathematics

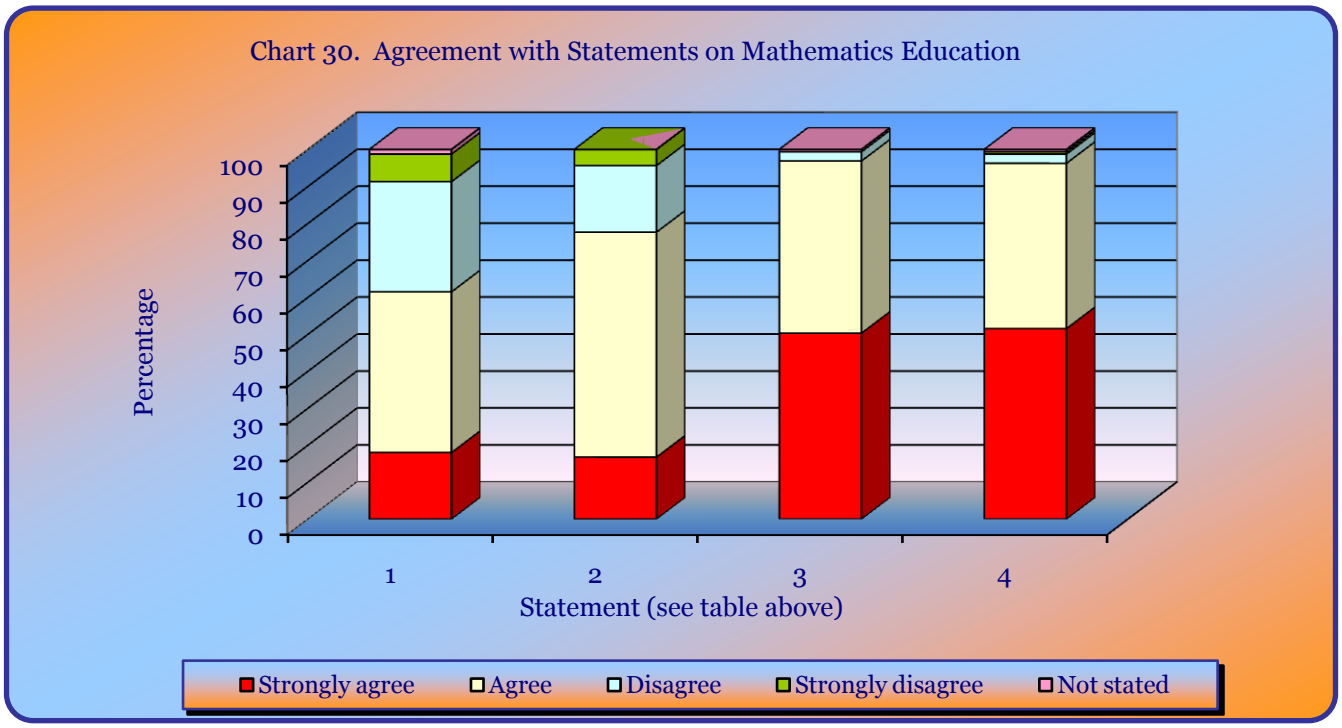
| Indicator | Agree/Disagree | | | | | |
|---|---|---|---|---|---|---|
| | Total | Strongly agree | Agree | Disagree | Strongly disagree | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Percentage | | | | | |
| 1 Remember formulas and procedures | 100 | 40 | 51 | 8 | 1 | 1 |
| 2 Think in sequential and procedural manner | 100 | 70 | 27 | 2 | 0 | 1 |
| 3 Understand mathematical concepts, principles and strategies | 100 | 80 | 20 | 0 | 0 | 0 |
| 4 Be able to think creatively | 100 | 60 | 37 | 3 | 0 | 0 |
| 5 Understand how mathematics is used in the real world | 100 | 59 | 39 | 1 | 1 | 0 |
| 6 Be able to provide reasons to support their solutions | 100 | 61 | 36 | 2 | 0 | 0 |




The survey results reflect a significant level of agreement amongst the sample of mathematics teachers on all of the above qualitative indicators on students ability for being 'good' at mathematics.

## Table 36. Agreement with Statements on Mathematics Education

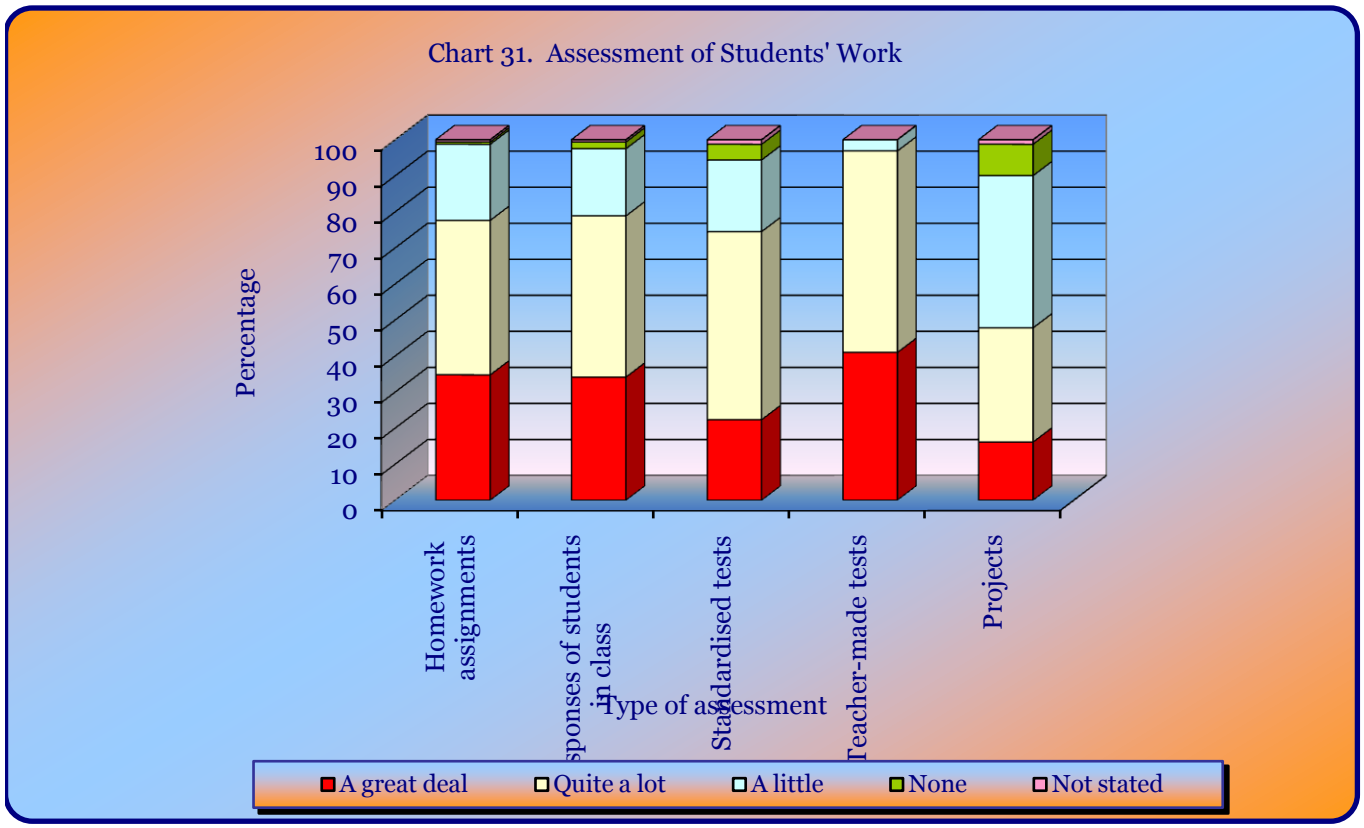
| | Statement | Total | Strongly agree | Agree | Disagree | Strongly disagree | Not stated |
|---|---|---|---|---|---|---|---|
| | | (1) | (2) | (3) | (4) | (5) | (6) |
| | | Percentage | | | | | |
| 1 | If students are having difficulty, an effective approach is to give them more practice by themselves during class. | 100 | 18 | 43 | 30 | 7 | 1 |
| 2 | Some students have a natural talent for maths and others do not. | 100 | 17 | 61 | 18 | 4 | 0 |
| 3 | More than one representation (picture, concrete material, symbol set, etc.) should be used in teaching mathematics. | 100 | 50 | 47 | 2 | 0 | 1 |
| 4 | An understanding of students is essential to teaching mathematics. | 100 | 52 | 45 | 2 | 1 | 1 |




Almost all mathematics teachers that participated in the survey agreed with the statements: 'more than one representation (picture, concrete material, symbol set, etc.) should be used in teaching mathematics' (97%) and 'an understanding of students is essential to teaching mathematics' (97%). There was also significant agreement with 'some students have a natural talent for mathematics and others do not' (78%). Thirty-seven percent (37%) disagreed with the statement 'if students are having difficulty, an effective approach is to give them more practice by themselves during class'.

## Table 37. Assessment of Students' Work

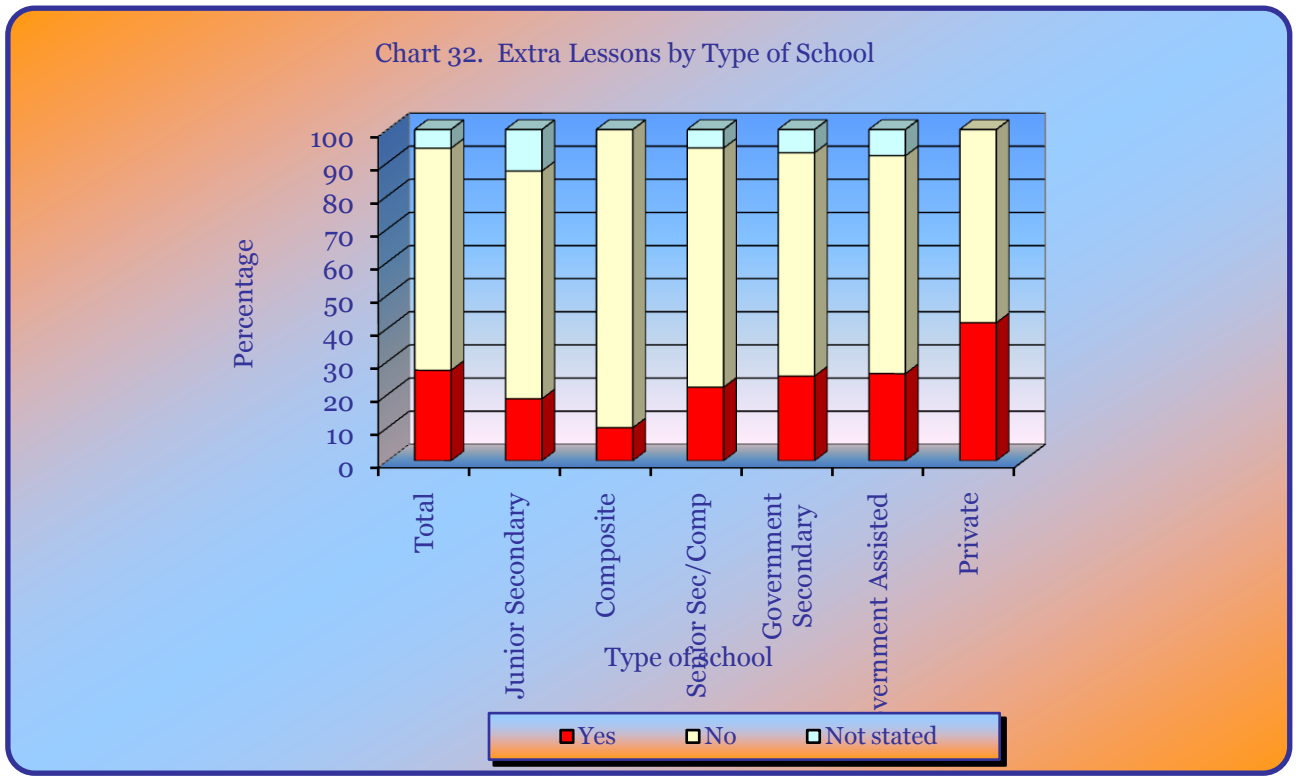
| Type of assessment | Weighting | | | | | |
|---|---|---|---|---|---|---|
| | Total | A great deal | Quite a lot | A little | None | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Percentage | | | | | |
| Homework assignments | 100 | 35 | 43 | 21 | 1 | 1 |
| Responses of students in class | 100 | 34 | 45 | 19 | 2 | 1 |
| Standardised tests | 100 | 22 | 52 | 20 | 4 | 1 |
| Teacher-made tests | 100 | 41 | 56 | 3 | 0 | 0 |
| Projects | 100 | 16 | 32 | 42 | 9 | 1 |




The table shows the weight given to the different types of assessment of students' work. An examination of the data indicates that most weight was allocated to teacher-made tests 'a great deal' (41%) and 'quite a lot' (56%). Projects, which received 'a little' weight by two-fifths (42%) of the teachers, was the least significant method of assessment.

## Table 38. Extra Lessons by Type of School

| Type of school | Give extra lessons | | | |
|---|---|---|---|---|
| | Total | Yes | No | Not stated |
| | (1) | (2) | (3) | (4) |
| | Percentage | | | |
| Total | 100 | 27 | 67 | 6 |
| Junior Secondary | 100 | 19 | 69 | 13 |
| Composite | 100 | 10 | 90 | 0 |
| Senior Sec/Comp | 100 | 22 | 72 | 6 |
| Government Secondary | 100 | 26 | 67 | 7 |
| Government Assisted | 100 | 26 | 66 | 8 |
| Private | 100 | 42 | 58 | 0 |




Approximately one-quarter (27%) of the sample of mathematics teachers indicated that they gave extra lessons compared with two-thirds (67%) who did not. Forty-two percent (42%) of the private secondary school teachers provided extra lessons.

# Students

## Table 39. Number of Students by Type of School and Form

| Type of school | Form | | | | |
|---|---|---|---|---|---|
| | Total | 1 | 2 | 3 | 4 |
| | (1) | (2) | (3) | (4) | (5) |
| Total | 4013 | 884 | 1074 | 1076 | 979 |
| Junior Secondary | 377 | 82 | 152 | 143 | 0 |
| Composite | 245 | 48 | 75 | 40 | 82 |
| Senior Sec/Comp | 415 | 81 | 96 | 79 | 159 |
| Government Secondary | 1045 | 309 | 261 | 263 | 212 |
| Government Assisted | 1281 | 289 | 321 | 400 | 271 |
| Private | 650 | 75 | 169 | 151 | 255 |

## Table 39a. Percentage of Students by Form within Type of School

| Type of school | Form | | | | |
|---|---|---|---|---|---|
| | Total | 1 | 2 | 3 | 4 |
| | (1) | (2) | (3) | (4) | (5) |
| Total | 100 | 22 | 27 | 27 | 24 |
| Junior Secondary | 100 | 22 | 40 | 38 | 0 |
| Composite | 100 | 20 | 31 | 16 | 33 |
| Senior Sec/Comp | 100 | 20 | 23 | 19 | 38 |
| Government Secondary | 100 | 30 | 25 | 25 | 20 |
| Government Assisted | 100 | 23 | 25 | 31 | 21 |
| Private | 100 | 12 | 26 | 23 | 39 |

## Table 39b. Percentage of Students by Type of School within Form

| Type of school | Form | | | | |
|---|---|---|---|---|---|
| | Total | 1 | 2 | 3 | 4 |
| | | (2) | (3) | (4) | (5) |
| Total | 100 | 100 | 100 | 100 | 100 |
| Junior Secondary | 9 | 9 | 14 | 13 | 0 |
| Composite | 6 | 5 | 7 | 4 | 8 |
| Senior Sec/Comp | 10 | 9 | 9 | 7 | 16 |
| Government Secondary | 26 | 35 | 24 | 24 | 22 |
| Government Assisted | 32 | 33 | 30 | 37 | 28 |
| Private | 16 | 8 | 16 | 14 | 26 |

The table above shows the sample of students who participated in the study by type of secondary school and form. In aggregate terms the data indicate that the distribution of the students was fairly even, ranging from 22% in Form 1 to 27% in Forms 2 or 3 (Table 39a). By type of school, however, the sample represents a substantial percentage of the students from government-assisted schools (32%) and government secondary schools (26%), due to the comparatively larger number of these schools and student population (Table 39b).

Chart 33. Students by Form within Type of School

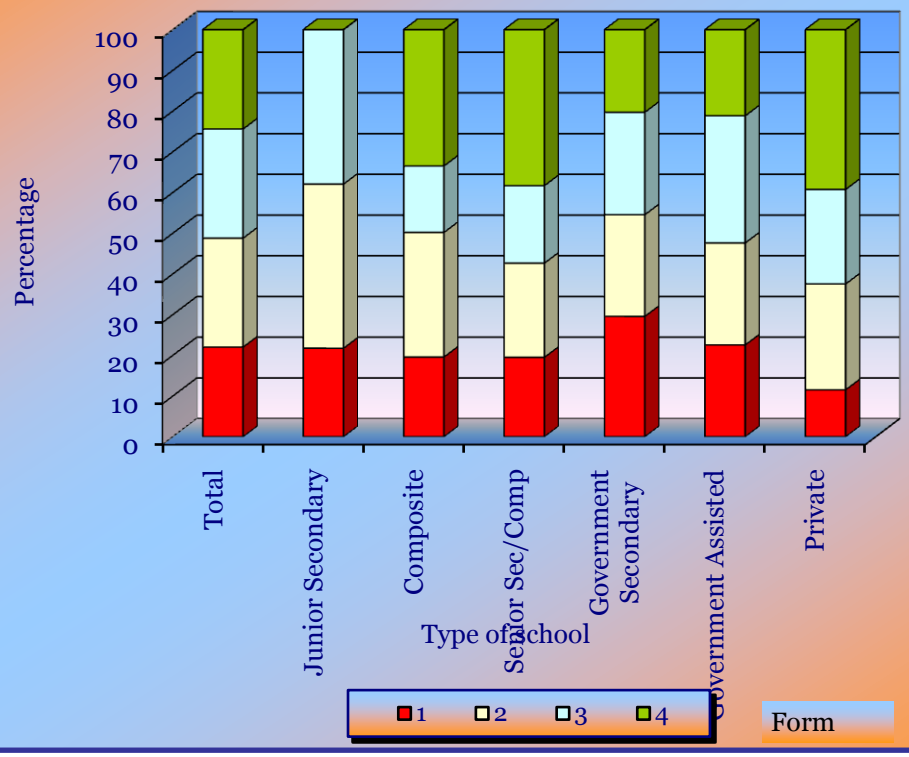
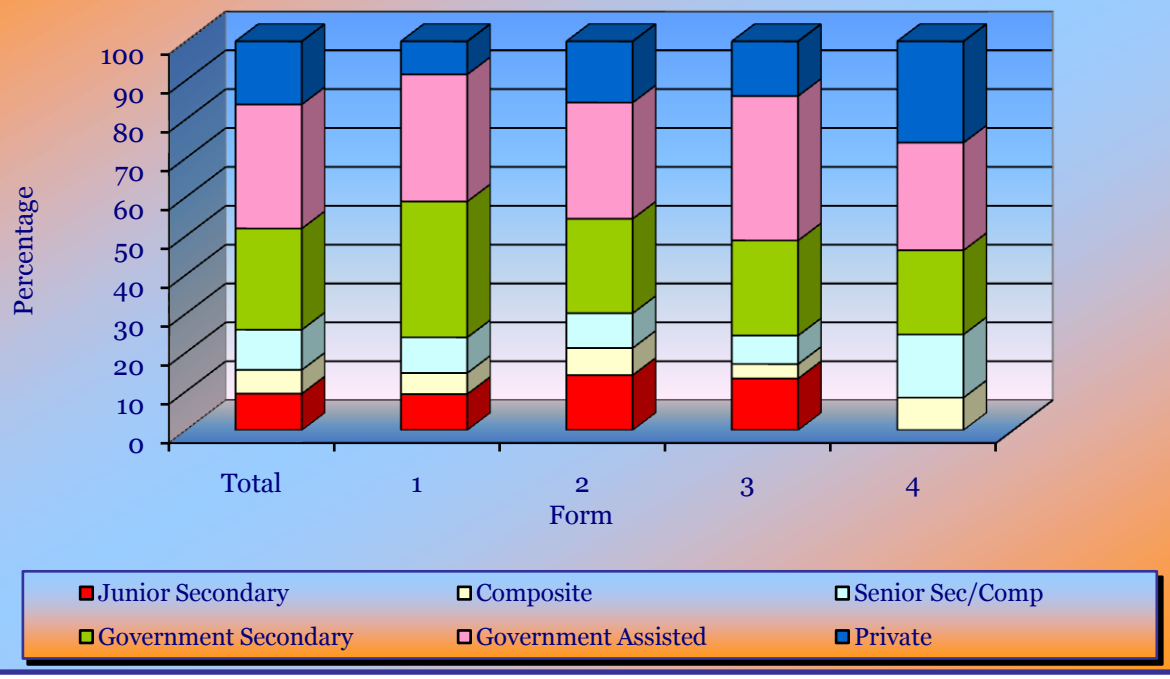


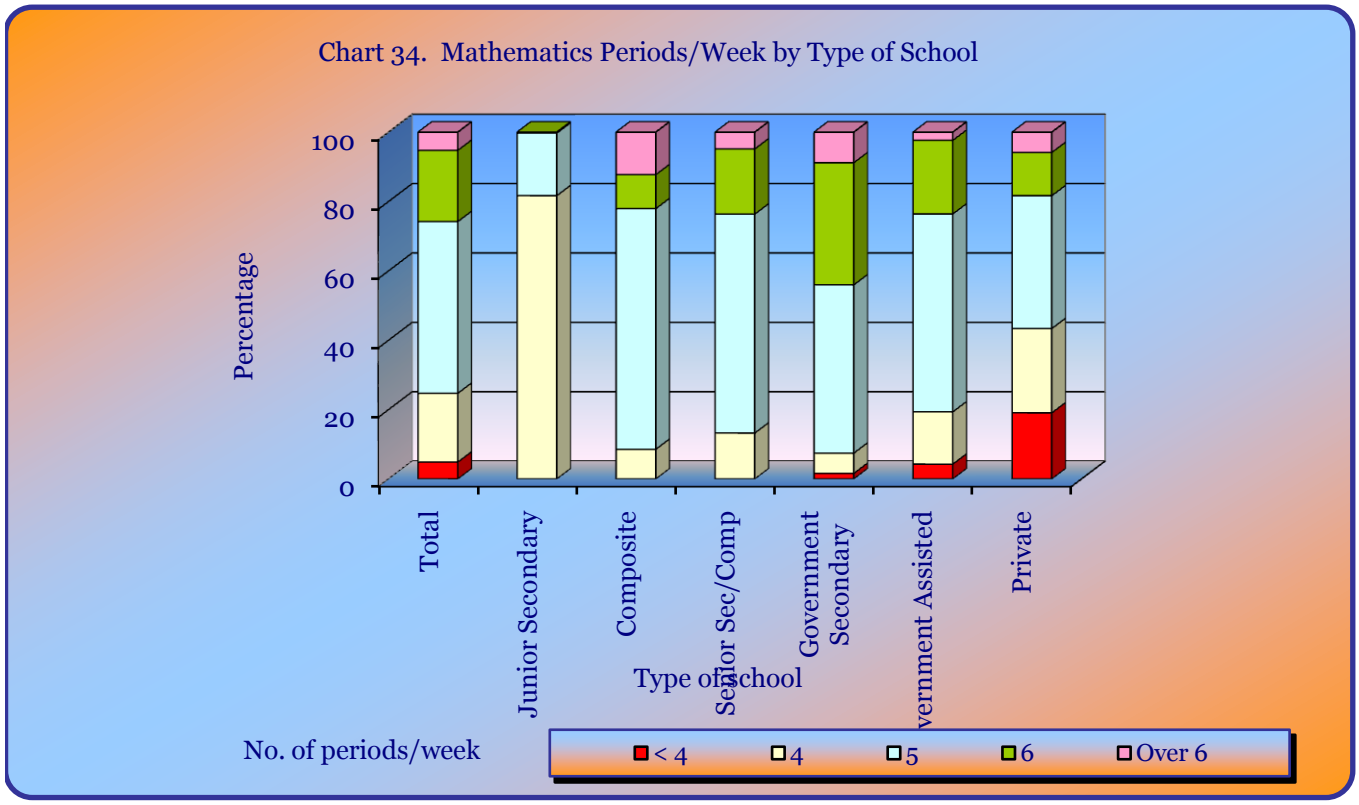

Chart 33a. Students by Type of School within Form




Source: Table 39

## Table 40. Percentage of Mathematics Periods/Week by Type of School

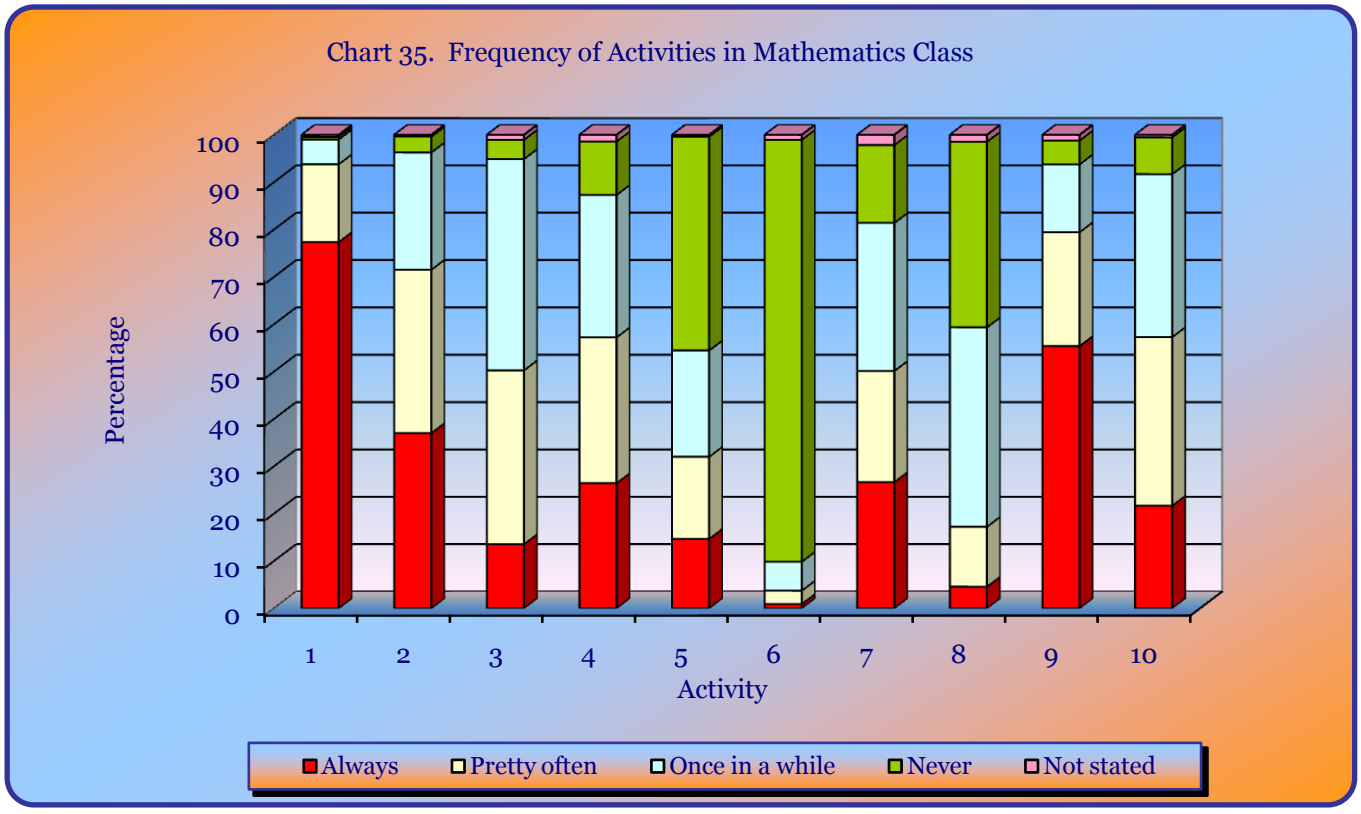
| Type of school | Frequency of mathematics periods/week | | | | | |
|---|---|---|---|---|---|---|
| | Total | < 4 | 4 | 5 | 6 | Over 6 |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Total | 100 | 5 | 20 | 50 | 21 | 5 |
| Junior Secondary | 100 | 0 | 82 | 18 | 0 | 0 |
| Composite | 100 | 0 | 9 | 69 | 10 | 12 |
| Senior Sec/Comp | 100 | 0 | 13 | 63 | 19 | 5 |
| Government Secondary | 100 | 2 | 6 | 49 | 35 | 9 |
| Government Assisted | 100 | 4 | 15 | 57 | 21 | 2 |
| Private | 100 | 19 | 24 | 38 | 12 | 6 |




The majority (50%) of students surveyed, as in the case of the teachers, reported five mathematics periods each week. By type of school the data reflect a similar trend except in the junior secondary schools where four-fifths (82%) of the students stated four periods of mathematics per week.

## T able 41. Frequency of Activities in Mathematics Class

| Activity | Frequency | | | | | |
|---|---|---|---|---|---|---|
| | Total | Always | Pretty often | Once in a while | Never | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Percentage | | | | | |
| 1 The teacher shows us how to do maths problems | 100 | 77 | 16 | 5 | 1 | 0 |
| 2 We copy notes from the board | 100 | 37 | 34 | 25 | 3 | 0 |
| 3 We have a quiz or test | 100 | 14 | 37 | 45 | 4 | 1 |
| 4 We work from worksheets or texbooks on our own | 100 | 26 | 31 | 30 | 11 | 1 |
| 5 We use calculators | 100 | 15 | 17 | 22 | 45 | 0 |
| 6 We use computers | 100 | 1 | 3 | 6 | 89 | 1 |
| 7 We relate maths to everyday problems | 100 | 27 | 23 | 31 | 16 | 2 |
| 8 We work in groups | 100 | 5 | 13 | 42 | 39 | 1 |
| 9 We discuss our completed homework | 100 | 55 | 24 | 14 | 5 | 1 |
| 10 Students use the board | 100 | 22 | 36 | 34 | 8 | 1 |




According to the students, of the activities listed in the table above, 'the teacher shows us how to do maths problems' (93%) and 'we discuss our completed homework' (79%) occurred most frequently in their mathematics class. One-half (50%) related mathematics to everyday problems 'always' and 'pretty often'. Approximately ninety percent (89%) of the students never used computers and similarly calculators (45%) and work in groups (39%). Working in groups occassionally was reported by 42% of the participants.

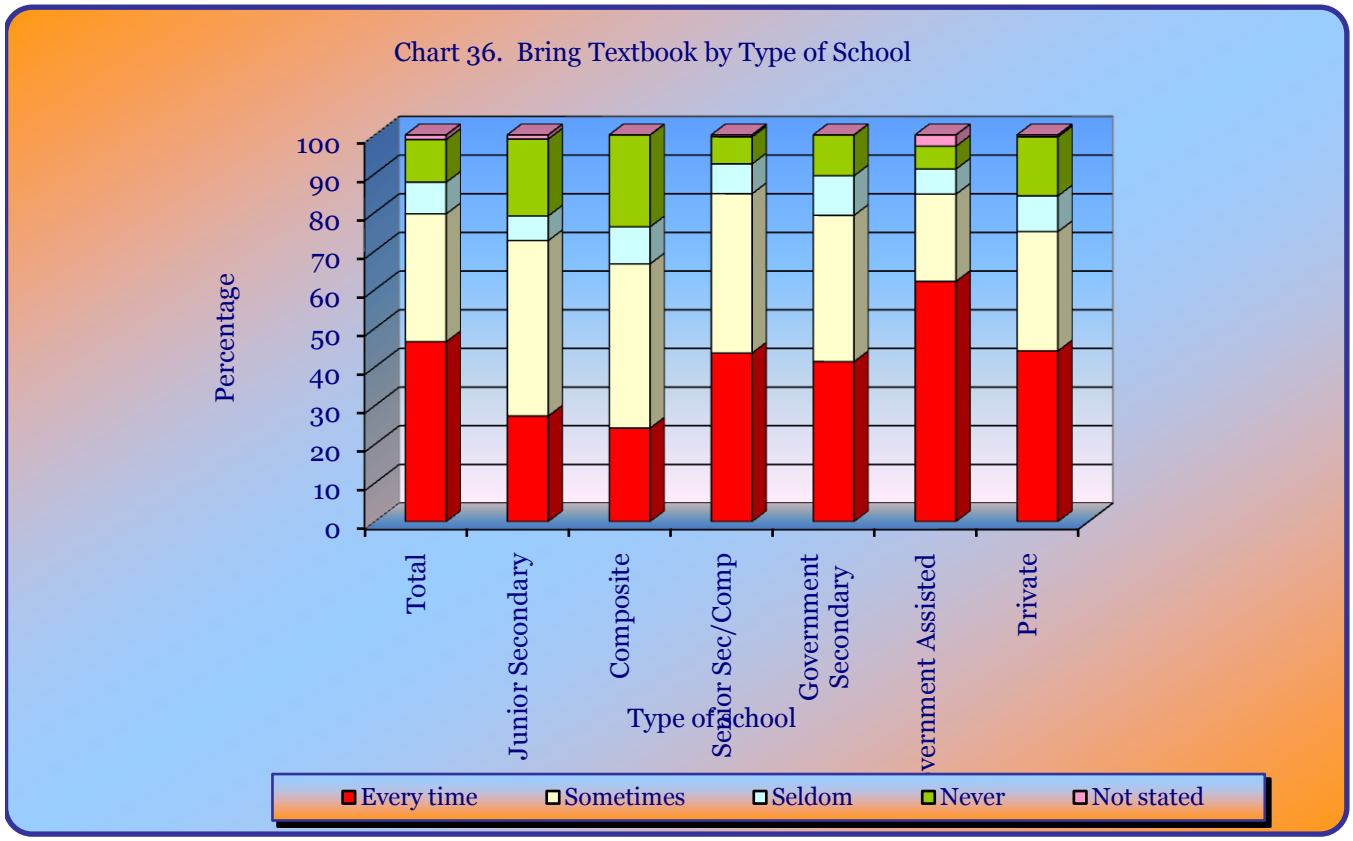
## Table 42. Adequacy of Mathematics Textbooks

| Mathematics textbook | Adequacy of mathematics textbook | | | |
|---|---|---|---|---|
| | Total | Adequate | Inadequate | Not stated |
| | (1) | (2) | (3) | (4) |
| | Percentage | | | |
| STP Maths for the Caribbean Series Book1 - Book4 - Layne et.al | 100 | 77 | 21 | 2 |
| Mathematics for Caribbean Schools Series Book1 - Book4 - Foster & Tomlinson | 100 | 59 | 37 | 4 |
| Success in Maths for the Caribbean Series Book1 - Book3 - Foster et.al | 100 | 61 | 35 | 4 |
| New Secondary Mathematics for Caribbean Schools Book3 - Seng & Keong | 100 | 31 | 68 | 1 |
| Mathematics A Complete Course with CXC Questions - R. Toolsie | 100 | 81 | 17 | 2 |
| Oxford Mathematics for the Caribbean for CXC Book4 - Goldberg & King | 100 | 65 | 34 | 1 |
| Certificate Mathematics A Revision Course for the Caribbean - Greer & Layne | 100 | 85 | 14 | 1 |
| CXC Mathematics for the 21st Century- Raghunandan | 100 | 65 | 33 | 2 |

A larger proportion (77%) of the sample of students stated that the STP Maths for the Caribbean Series Book1-Book4 - Layne et.al was adequate compared to the teachers (54%) (Table 17). Similarly, the percentage of students (85%) who stated that Certificate Mathematics A Revision Course for the Caribbean - Greer & Layne was adequate, was twice the percentage of the teachers (43%). The highest percentage (68%) of inadequacy was recorded by students who used the New Secondary Mathematics for Caribbean Schools Book3 - Seng & Keong, in comparison to 89% of the teachers who reported this text to be adequate.

## Table 43. Bring Textbook by Type of School

| Type of school | Bring textbook to school | | | | | |
|---|---|---|---|---|---|---|
| | Total | Every time | Sometimes | Seldom | Never | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Percentage | | | | | |
| Total | 100 | 47 | 33 | 8 | 11 | 1 |
| Junior Secondary | 100 | 27 | 45 | 6 | 20 | 1 |
| Composite | 100 | 24 | 42 | 10 | 24 | 0 |
| Senior Sec/Comp | 100 | 44 | 41 | 8 | 7 | 0 |
| Government Secondary | 100 | 41 | 38 | 10 | 11 | 0 |
| Government Assisted | 100 | 62 | 23 | 6 | 6 | 3 |
| Private | 100 | 44 | 31 | 9 | 15 | 0 |

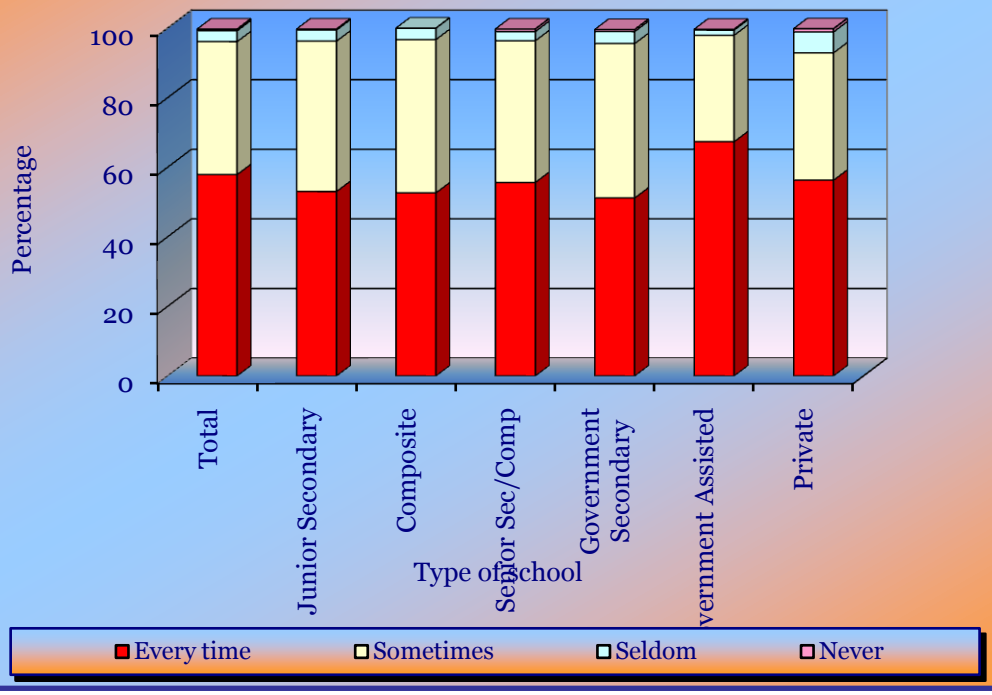



The data reveal that the majority (47%) of the students brought their textbooks to school 'every time' while one-third (33%) stated 'sometimes'. By type of school, the largest percentage (62%) of students who brought their mathematics text 'every time' was recorded in the government-assisted secondary schools.

## Table 44. Frequency of Mathematics Homework by Type of School

| Type of school | Teacher give mathematics homework | | | | |
|---|---|---|---|---|---|
| | Total | Every time | Sometimes | Seldom | Never |
| | (1) | (2) | (3) | (4) | (5) |
| | Percentage | | | | |
| Total | 100 | 58 | 38 | 3 | 0 |
| Junior Secondary | 100 | 53 | 43 | 3 | 0 |
| Composite | 100 | 53 | 44 | 3 | 0 |
| Senior Sec/Comp | 100 | 56 | 41 | 3 | 1 |
| Government Secondary | 100 | 51 | 44 | 3 | 1 |
| Government Assisted | 100 | 67 | 31 | 1 | 0 |
| Private | 100 | 56 | 37 | 6 | 1 |

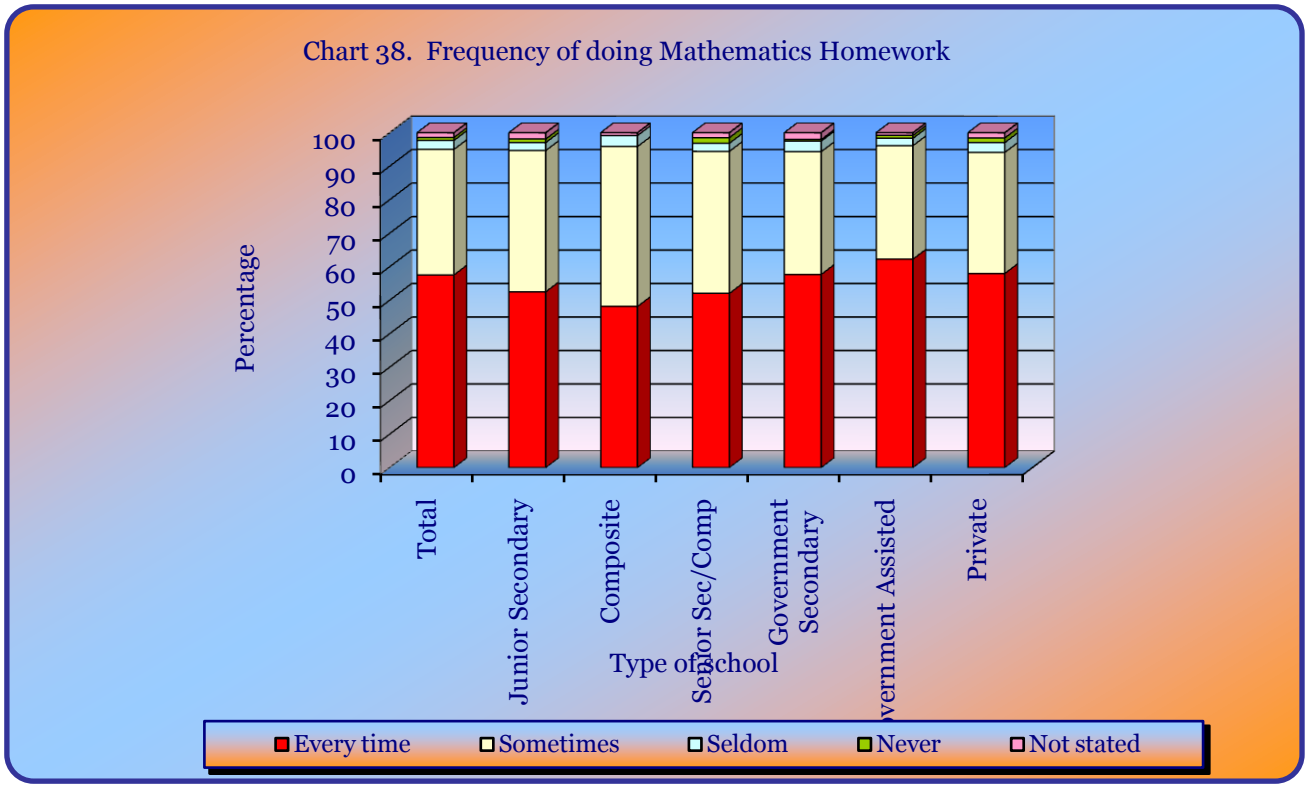
Chart 37. Frequency of Mathematics Homework by Type of School




Over one-half (58%) of the students surveyed indicated that teachers assigned mathematics homework 'every time'. The highest percentage (67%) of students who reported homework 'every time' was observed in the government-assisted schools.

## Table 45. Frequency of doing Mathematics Homework

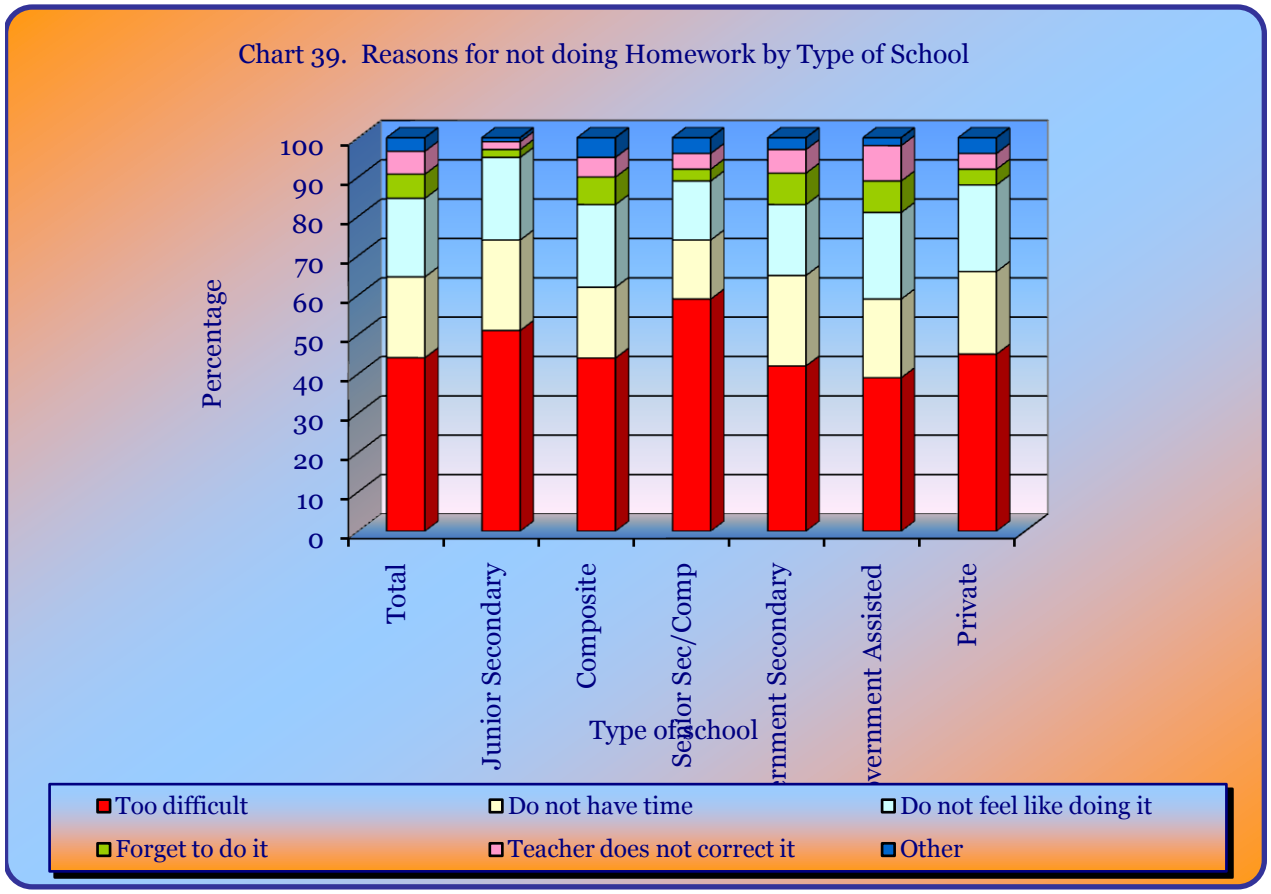
| Type of school | Do mathematics homework | | | | | |
|---|---|---|---|---|---|---|
| | Total | Every time | Sometimes | Seldom | Never | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Percentage | | | | | |
| Total | 100 | 58 | 37 | 3 | 1 | 1 |
| Junior Secondary | 100 | 53 | 42 | 2 | 1 | 2 |
| Composite | 100 | 48 | 48 | 3 | 0 | 1 |
| Senior Sec/Comp | 100 | 52 | 42 | 2 | 2 | 1 |
| Government Secondary | 100 | 58 | 37 | 3 | 0 | 2 |
| Government Assisted | 100 | 62 | 34 | 2 | 1 | 1 |
| Private | 100 | 58 | 36 | 3 | 1 | 2 |




The response data reveal that most students did their homework 'every time' (58%) and 'sometimes' (37%). When analysed by type of school the data depict a similar pattern of responses.

## Table 46. Reasons for not doing Homework by Type of School

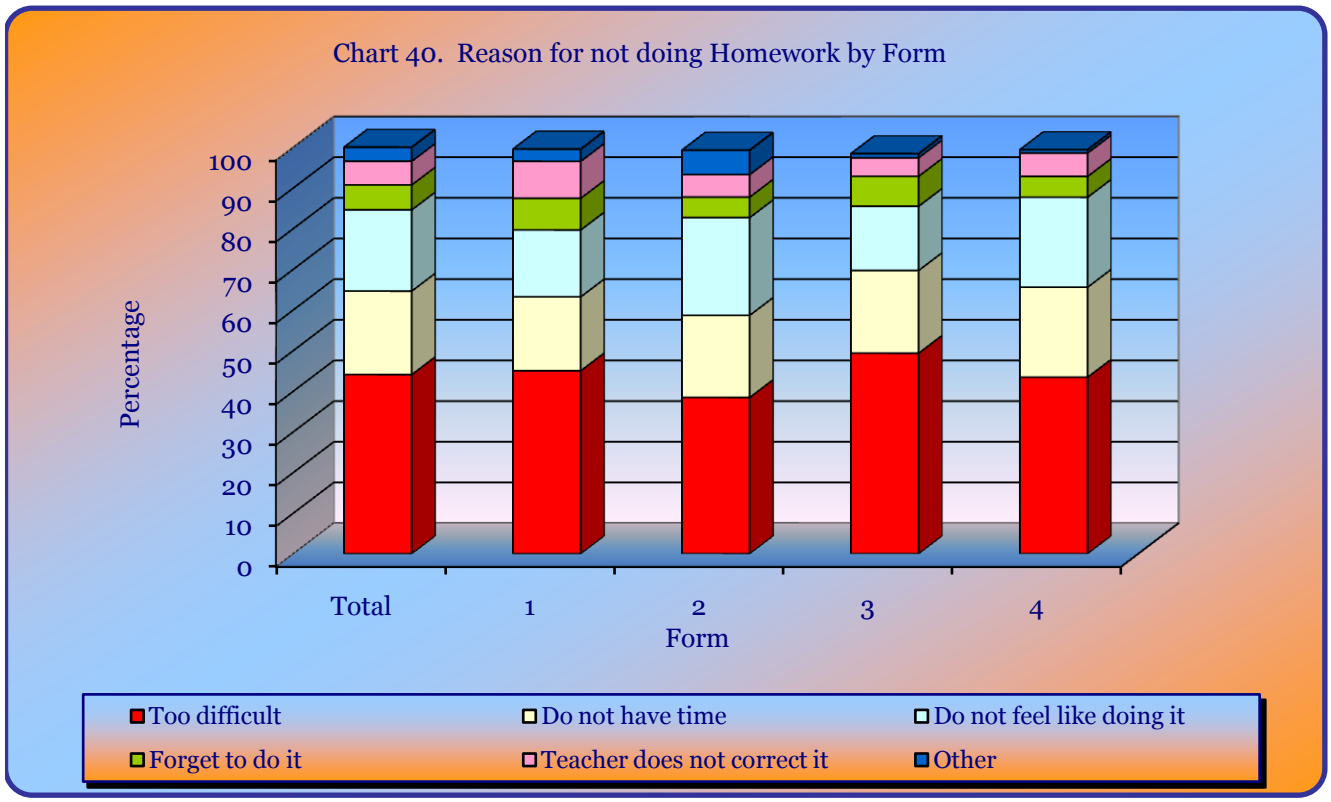
| Reason | Type of school | | | | | | |
|---|---|---|---|---|---|---|---|
| | Total | Junior Secondary | Composite | Senior Sec/Comp | Government Secondary | Government Assisted | Private |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| | Percentage | | | | | | |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Too difficult | 44 | 51 | 44 | 59 | 42 | 39 | 45 |
| Do not have time | 21 | 23 | 18 | 15 | 23 | 20 | 21 |
| Do not feel like doing it | 20 | 21 | 21 | 15 | 18 | 22 | 22 |
| Forget to do it | 6 | 2 | 7 | 3 | 8 | 8 | 4 |
| Teacher does not correct it | 6 | 2 | 5 | 4 | 6 | 9 | 4 |
| Other | 4 | 1 | 5 | 4 | 3 | 2 | 4 |




The table above shows the reasons given by students for not doing their homework every time. The largest proportion (44%) of the students, especially in the senior secondary/comprehensive schools (59%), indicated that the homework was 'too difficult'. One-fifth in each case did not have time (21%) and did not feel like doing it (20%). Similarly, by form 'too difficult' was observed as the main reason for not doing homework (Table 46a).

## Table 46a. Reasons for not doing Homework by Form

| Reason | Form | | | | |
|---|---|---|---|---|---|
| | Total | 1 | 2 | 3 | 4 |
| | (1) | (2) | (3) | (4) | (5) |
| | Percentage | | | | |
| Total | 100 | 100 | 100 | 100 | 100 |
| Too difficult | 44 | 45 | 38 | 49 | 43 |
| Do not have time | 21 | 18 | 20 | 20 | 22 |
| Do not feel like doing it | 20 | 16 | 24 | 16 | 22 |
| Forget to do it | 6 | 8 | 5 | 7 | 5 |
| Teacher does not correct it | 6 | 9 | 6 | 5 | 6 |
| Other | 4 | 3 | 6 | 1 | 1 |



## Table 47. Time Taken to do Homework by Type of School

| Type of school | Time taken | | | | | |
|---|---|---|---|---|---|---|
| | Total | <15 mins | 15-29 mins | 30-59 mins | 60 mins and more | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Percentage | | | | | |
| Total | 100 | 14 | 37 | 30 | 15 | 5 |
| Junior Secondary | 100 | 19 | 38 | 21 | 17 | 5 |
| Composite | 100 | 9 | 40 | 28 | 15 | 7 |
| Senior Sec/Comp | 100 | 10 | 28 | 35 | 24 | 3 |
| Government Secondary | 100 | 17 | 34 | 31 | 14 | 5 |
| Government Assisted | 100 | 13 | 41 | 31 | 11 | 3 |
| Private | 100 | 14 | 34 | 28 | 16 | 8 |

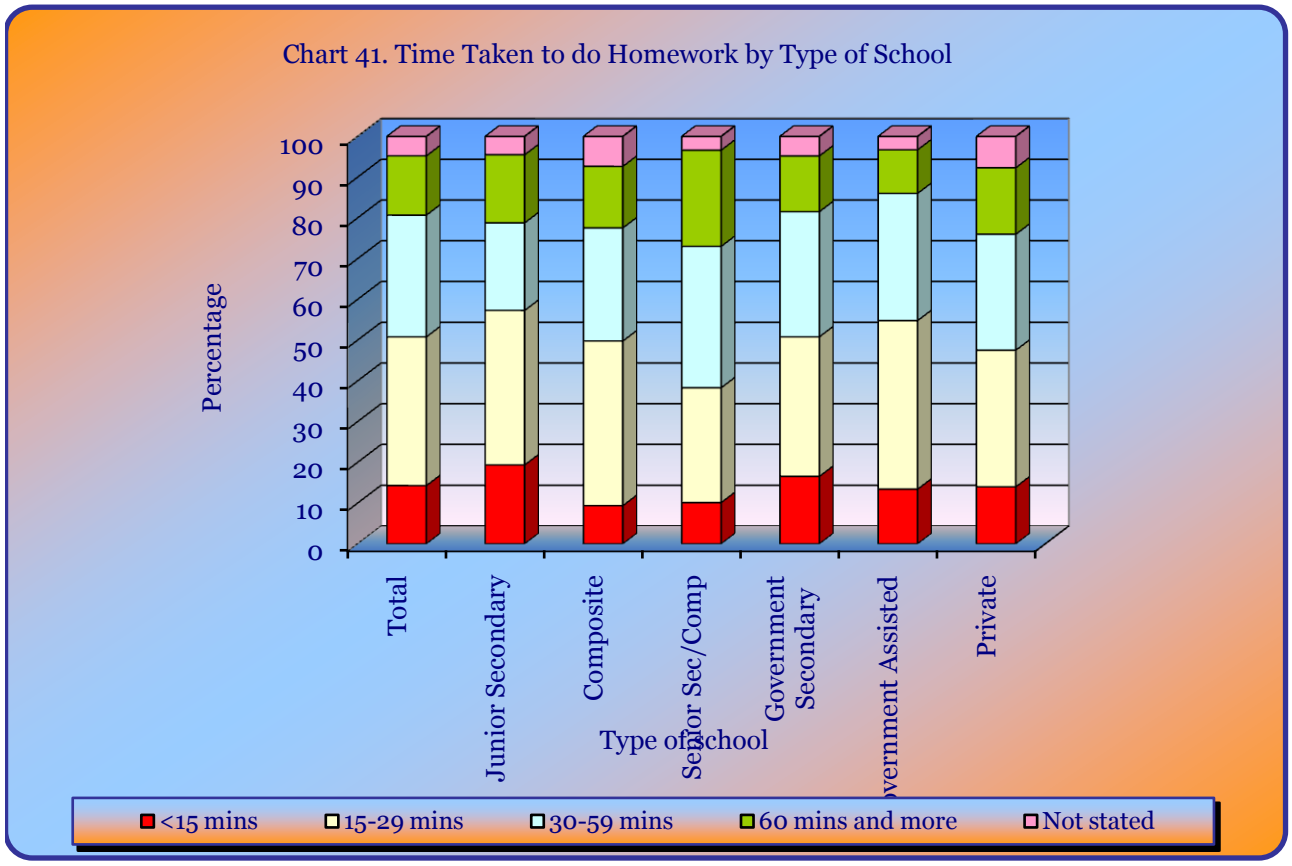
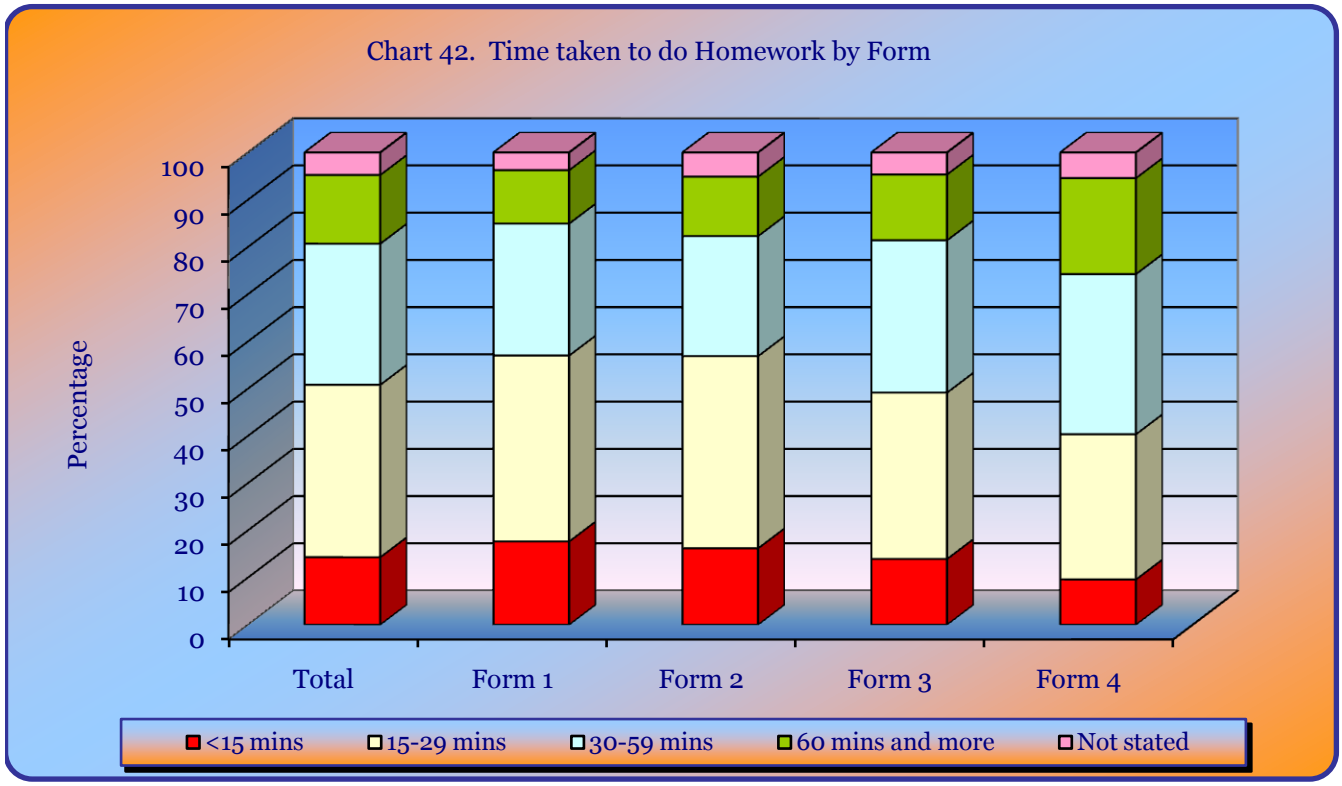



Table 47 shows the time taken by students to do their homework. A relatively large percentage (37%) of students stated '15-29 minutes' and 30% took '30-59 minutes'. The senior secondary/comprehensive school students reported the most time taken to do homework with 35% taking between '30-59 minutes' and 24 % '60 minutes and more'.

## Table 47a. Time Taken to do Homework by Form

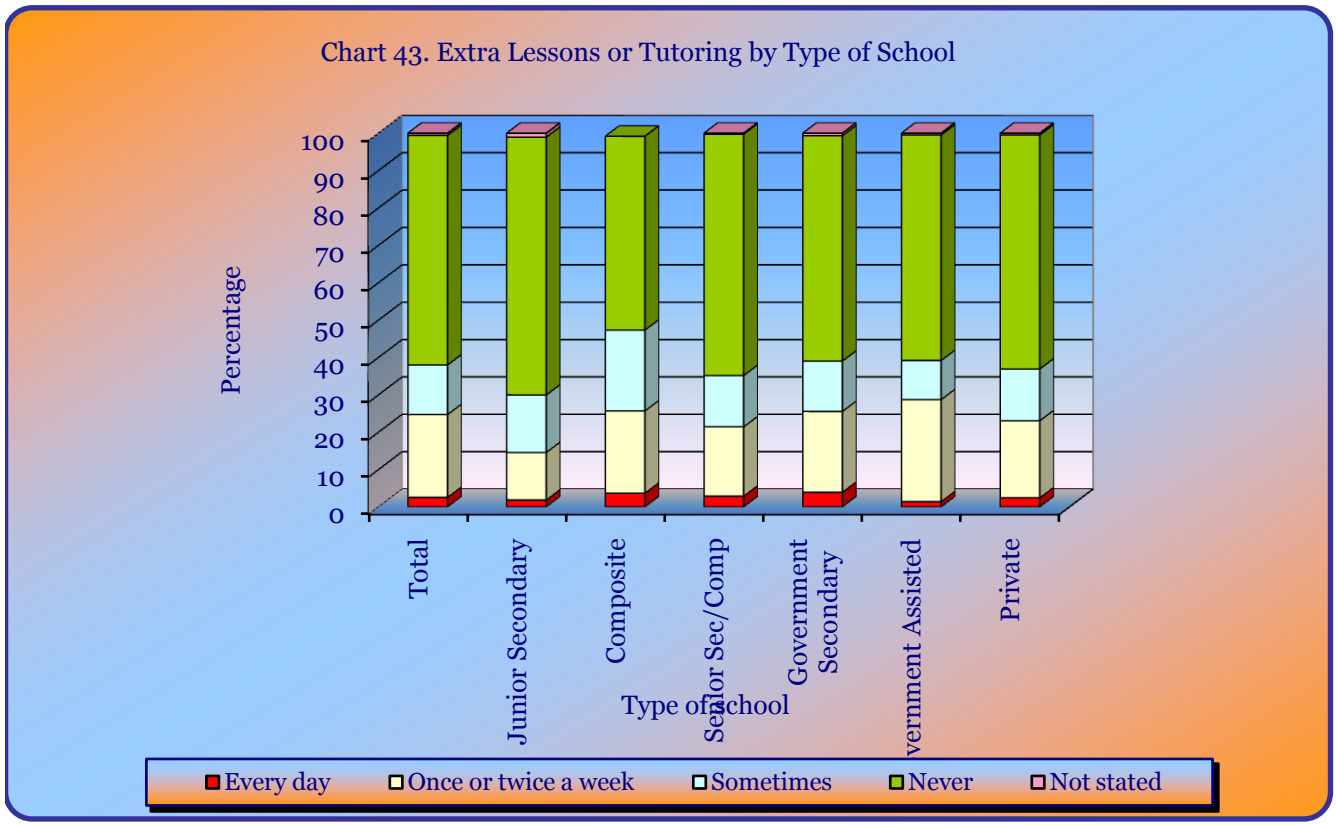
| Form | Time taken | | | | | |
|---|---|---|---|---|---|---|
| | Total | <15 mins | 15-29 mins | 30-59 mins | 60 mins and more | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Percentage | | | | | |
| Total | 100 | 14 | 37 | 30 | 15 | 5 |
| Form 1 | 100 | 18 | 39 | 28 | 11 | 4 |
| Form 2 | 100 | 16 | 41 | 25 | 13 | 5 |
| Form 3 | 100 | 14 | 35 | 32 | 14 | 5 |
| Form 4 | 100 | 10 | 31 | 34 | 20 | 5 |




A review of the time taken to do homework by form shows that students of the higher forms took more time to do their homework when compared to their counterparts of the lower forms. One-third (34%) of the Form 4 students reported '30-59 minutes' and one-fifth (20%) stated '60 minutes and more'.

## Table 48. Extra Lessons or Tutoring by Type of School

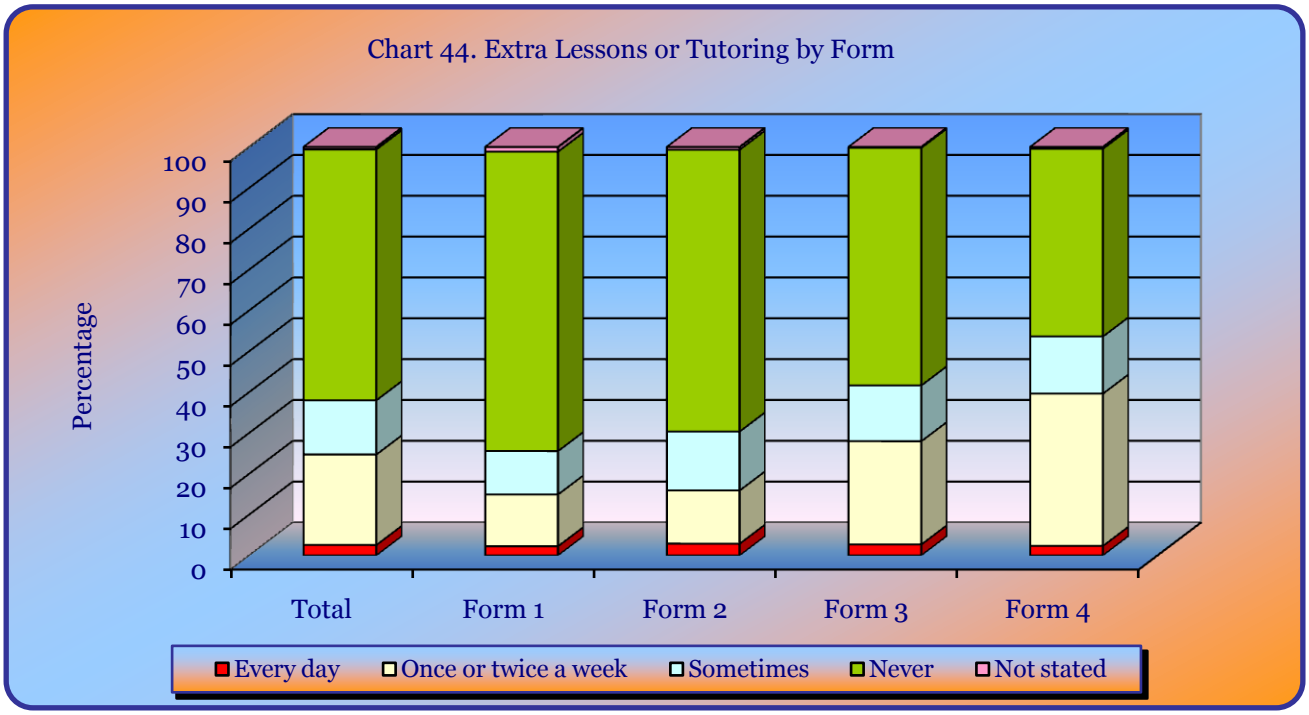
| Type of school | Frequency of extra lessons or tutoring | | | | | |
|---|---|---|---|---|---|---|
| | Total | Every day | Once or twice a week | Sometimes | Never | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Percentage | | | | | |
| Total | 100 | 3 | 22 | 13 | 61 | 1 |
| Junior Secondary | 100 | 2 | 13 | 15 | 69 | 1 |
| Composite | 100 | 4 | 22 | 22 | 52 | 0 |
| Senior Sec/Comp | 100 | 3 | 19 | 14 | 65 | 0 |
| Government Secondary | 100 | 4 | 22 | 13 | 60 | 1 |
| Government Assisted | 100 | 1 | 27 | 10 | 60 | 0 |
| Private | 100 | 2 | 21 | 14 | 63 | 0 |




Three-fifths (61%) of the total sample of secondary school students did not take extra lessons or tutoring. This trend was reflected in all type of schools except the composite schools where approximately one-half (48%) of the students received extra lessons or tutoring.

## Table 48a. Extra Lessons or Tutoring by Form

| Form | Frequency of extra lessons or tutoring | | | | | |
|---|---|---|---|---|---|---|
| | Total | Every day | Once or twice a week | Sometimes | Never | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Percentage | | | | | |
| Total | 100 | 3 | 22 | 13 | 61 | 1 |
| Form 1 | 100 | 2 | 13 | 11 | 73 | 1 |
| Form 2 | 100 | 3 | 13 | 14 | 69 | 1 |
| Form 3 | 100 | 3 | 25 | 14 | 58 | 0 |
| Form 4 | 100 | 2 | 37 | 14 | 46 | 0 |




Further examination of the data by form indicates that students in the higher forms accessed extra lessons or tutoring more frequently than their counterparts in the lower forms. A substantial proportion (37%) of the Form 4 students received extra lessons or tutoring 'once or twice a week'.

## Table 49. Reasons for Taking Extra Lesson by Type of School

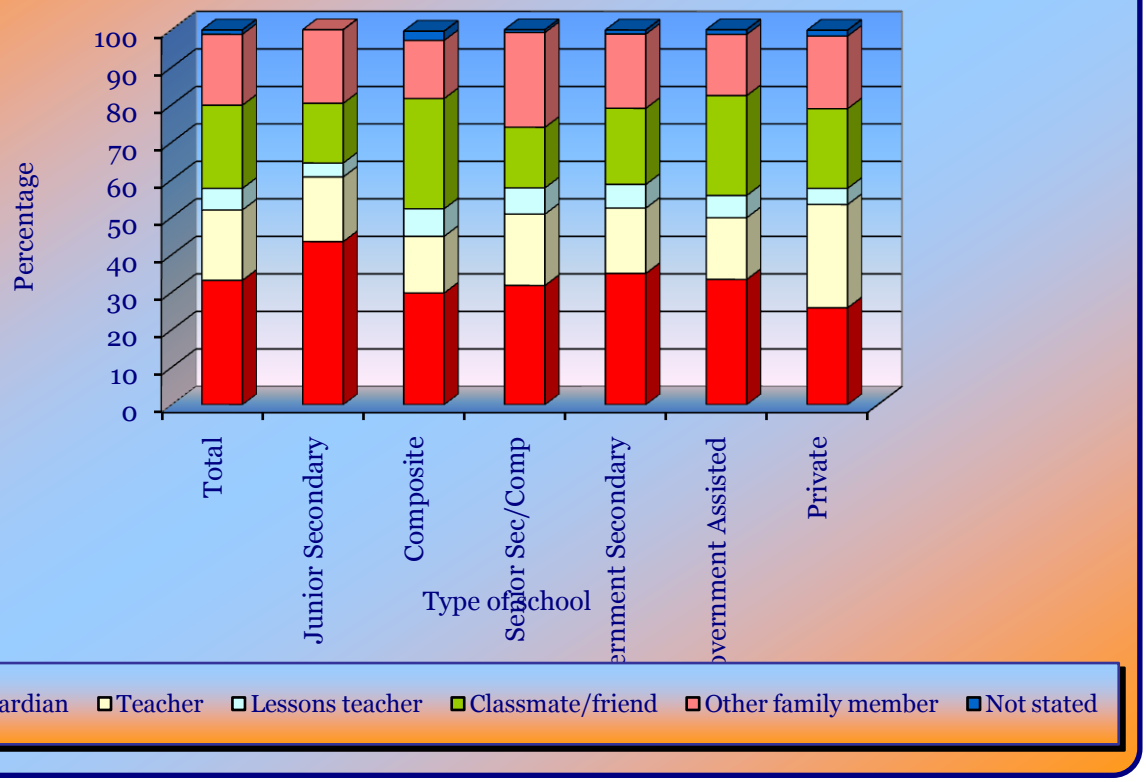
| Type of school | Reason for extra lesson | | | | | | |
|---|---|---|---|---|---|---|---|
| | Total | To do better | To learn more | To stay focus | Parents sent me | Other | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| | Percentage | | | | | | |
| Total | 100 | 42 | 31 | 2 | 2 | 1 | 21 |
| Junior Secondary | 100 | 56 | 19 | 3 | 1 | 1 | 21 |
| Composite | 100 | 33 | 32 | 1 | 0 | 2 | 32 |
| Senior Sec/Comp | 100 | 42 | 41 | 1 | 2 | 0 | 14 |
| Government Secondary | 100 | 37 | 27 | 2 | 1 | 0 | 32 |
| Government Assisted | 100 | 44 | 36 | 3 | 3 | 1 | 12 |
| Private | 100 | 45 | 28 | 2 | 4 | 0 | 21 |

Forty-two percent (42%) of the students attended extra lessons 'to do better' and approximately one-third (31%) 'to learn more'.

## Table 50. Seeking Help with Mathematics Homework by Type of School

| Type of school | Seeking help with homework | | | | | | |
|---|---|---|---|---|---|---|---|
| | Total | Parent/ guardian | Teacher | Lessons teacher | Classmate/ friend | Other family member | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| | Percentage | | | | | | |
| Total | 100 | 33 | 19 | 6 | 22 | 19 | 1 |
| Junior Secondary | 100 | 44 | 17 | 4 | 16 | 20 | 0 |
| Composite | 100 | 30 | 15 | 7 | 29 | 16 | 2 |
| Senior Sec/Comp | 100 | 32 | 19 | 7 | 16 | 25 | 1 |
| Government Secondary | 100 | 35 | 17 | 6 | 20 | 20 | 1 |
| Government Assisted | 100 | 33 | 16 | 6 | 27 | 16 | 1 |
| Private | 100 | 26 | 28 | 4 | 21 | 19 | 2 |

Chart 45. Seeking Help with Mathematics Homework by Type of School

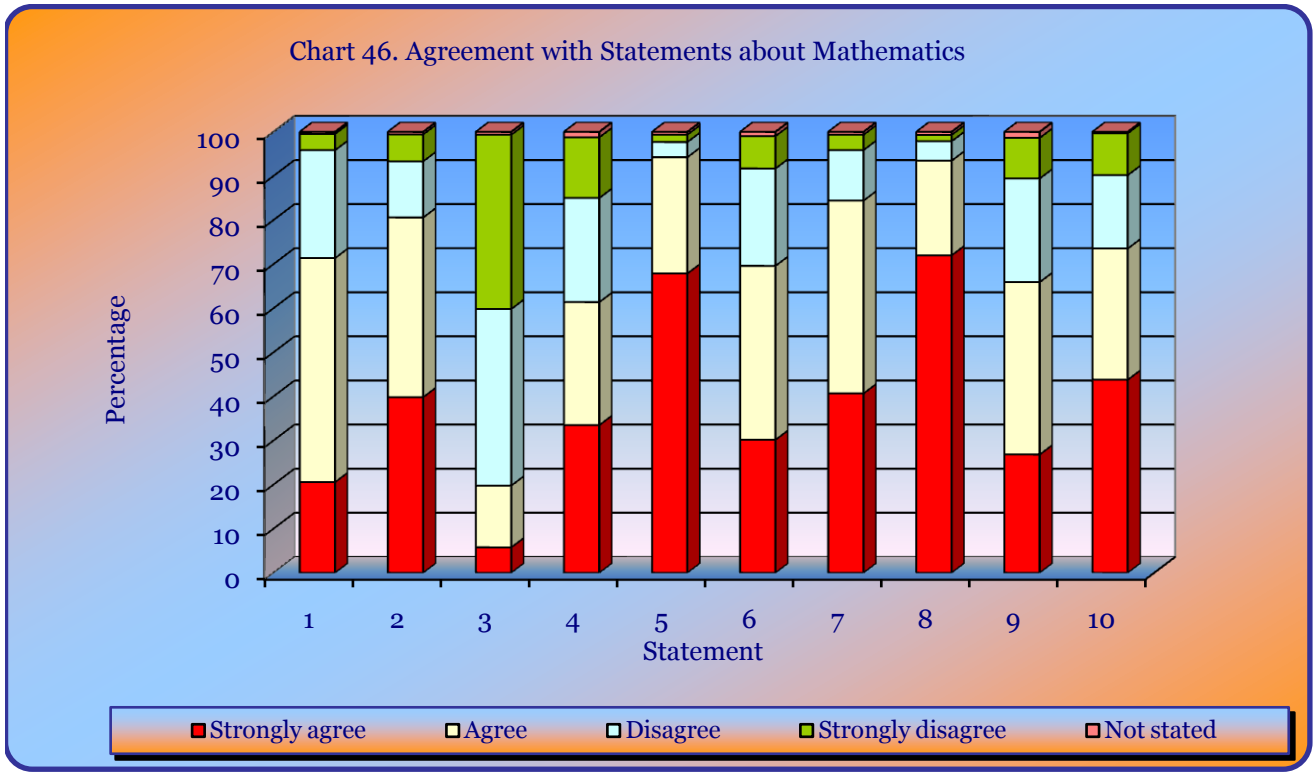



One-third (33%) of the sample of students sought help with their homework from their parents or guardians and one-fifth (22%) from classmates or friends.

## Table 51. Agreement with Statements about Mathematics

| Statement | Total | Strongly agree | Agree | Disagree | Strongly disagree | Not stated |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Percentage | | | | | |
| 1 I usually do well in mathematics | 100 | 21 | 51 | 24 | 4 | 0 |
| 2 I like mathematics | 100 | 40 | 41 | 13 | 6 | 1 |
| 3 Sometimes, when I don't initially understand a new topic in mathematics, I know that I will never really understand it | 100 | 6 | 14 | 40 | 40 | 1 |
| 4 I would like mathematics much more if it were not so difficult | 100 | 34 | 28 | 24 | 14 | 1 |
| 5 I think learning mathematics will help me in my daily life | 100 | 68 | 26 | 3 | 2 | 1 |
| 6 I would like to take more mathematics in school | 100 | 30 | 39 | 22 | 7 | 1 |
| 7 I need mathematics to learn other school subjects | 100 | 41 | 44 | 11 | 3 | 1 |
| 8 I need to do well in mathematics to get the job I want | 100 | 72 | 21 | 4 | 1 | 1 |
| 9 I would like a job that involved mathematics | 100 | 27 | 39 | 23 | 9 | 1 |
| 10 I need to do well in mathematics to please my parents | 100 | 44 | 30 | 17 | 9 | 0 |

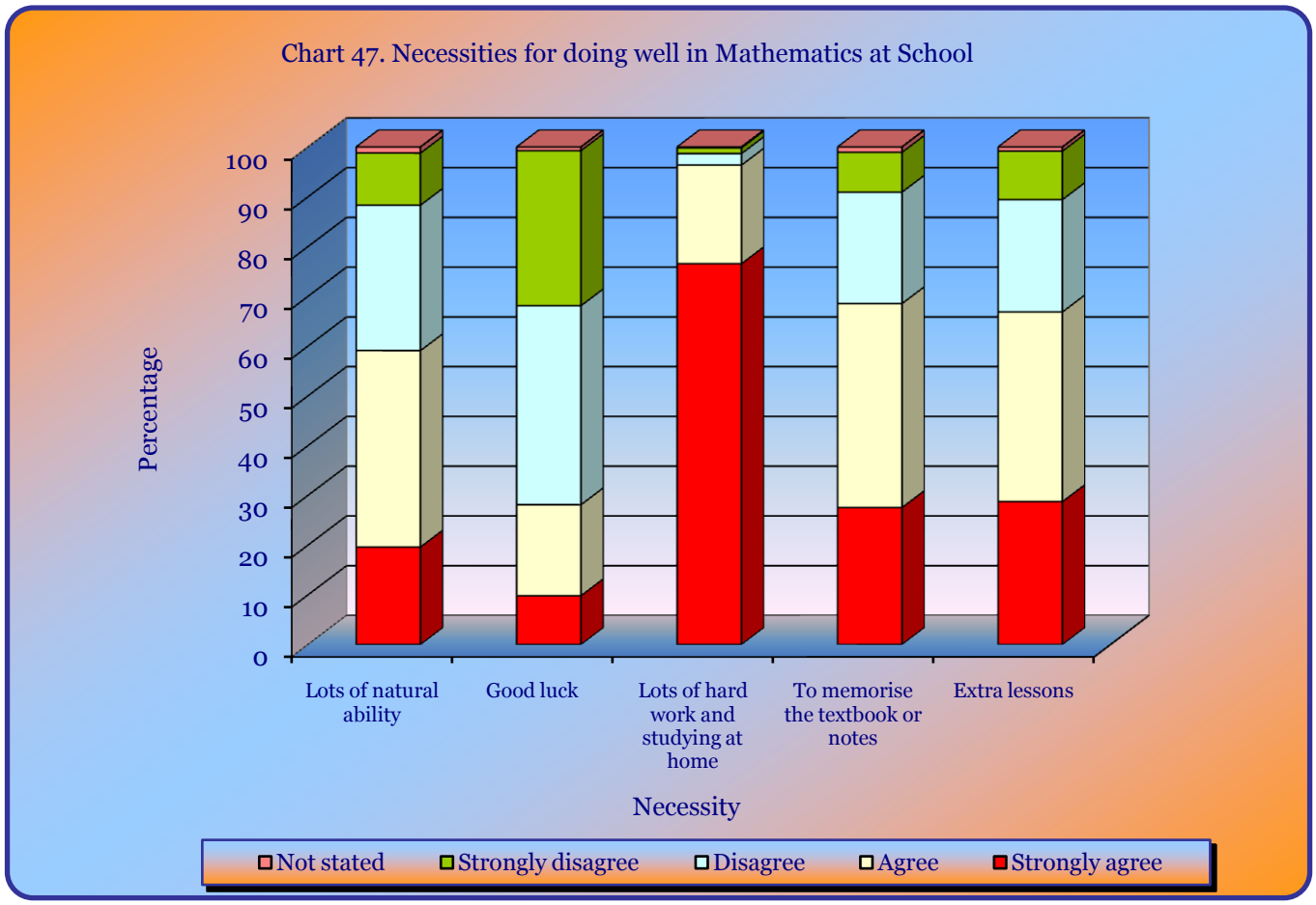
Most of the students surveyed agreed with the statements: 'I think learning mathematics will help me in my daily life' (94%), 'I need to do well in mathematics to get the job I want' (93%), 'I need mathematics to learn other school subjects' (85%) and 'I like mathematics' (81%). Seventy-two percent (72%) indicated that they usually did well in mathematics and 74% agreed that they need to do well to please their parents. The data also reveal a significant level of disagreement (80%) amongst students about; sometimes, when they did not initially understand a new topic in mathematics, they knew that they would never really understand it.




**Source:** Table 51

## Table 52. Necessities for doing well in Mathematics at School

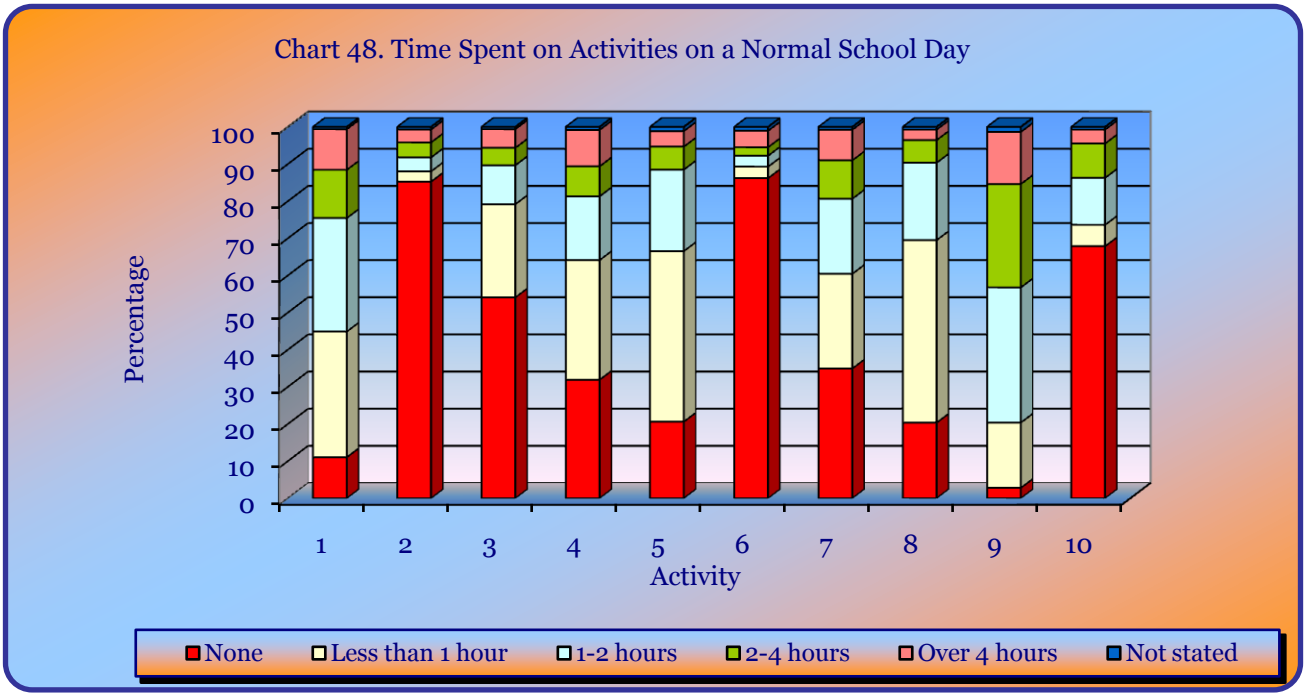
| Necessity | Total | Strongly agree | Agree | Disagree | Strongly disagree | Not stated |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Percentage | | | | | |
| Lots of natural ability | 100 | 20 | 39 | 29 | 10 | 1 |
| Good luck | 100 | 10 | 18 | 40 | 31 | 1 |
| Lots of hard work and studying at home | 100 | 77 | 20 | 2 | 1 | 0 |
| To memorise the textbook or notes | 100 | 28 | 41 | 22 | 8 | 1 |
| Extra lessons | 100 | 29 | 38 | 23 | 10 | 1 |




Almost all (97%) of the students surveyed agreed that 'lots of hard work and studying at home' was necessary to do well in mathematics at school and a large proportion (71%) disagreed that 'good luck' was needed to perform well in the subject.

## Table 53. Time Spent on Activities on a Normal School Day

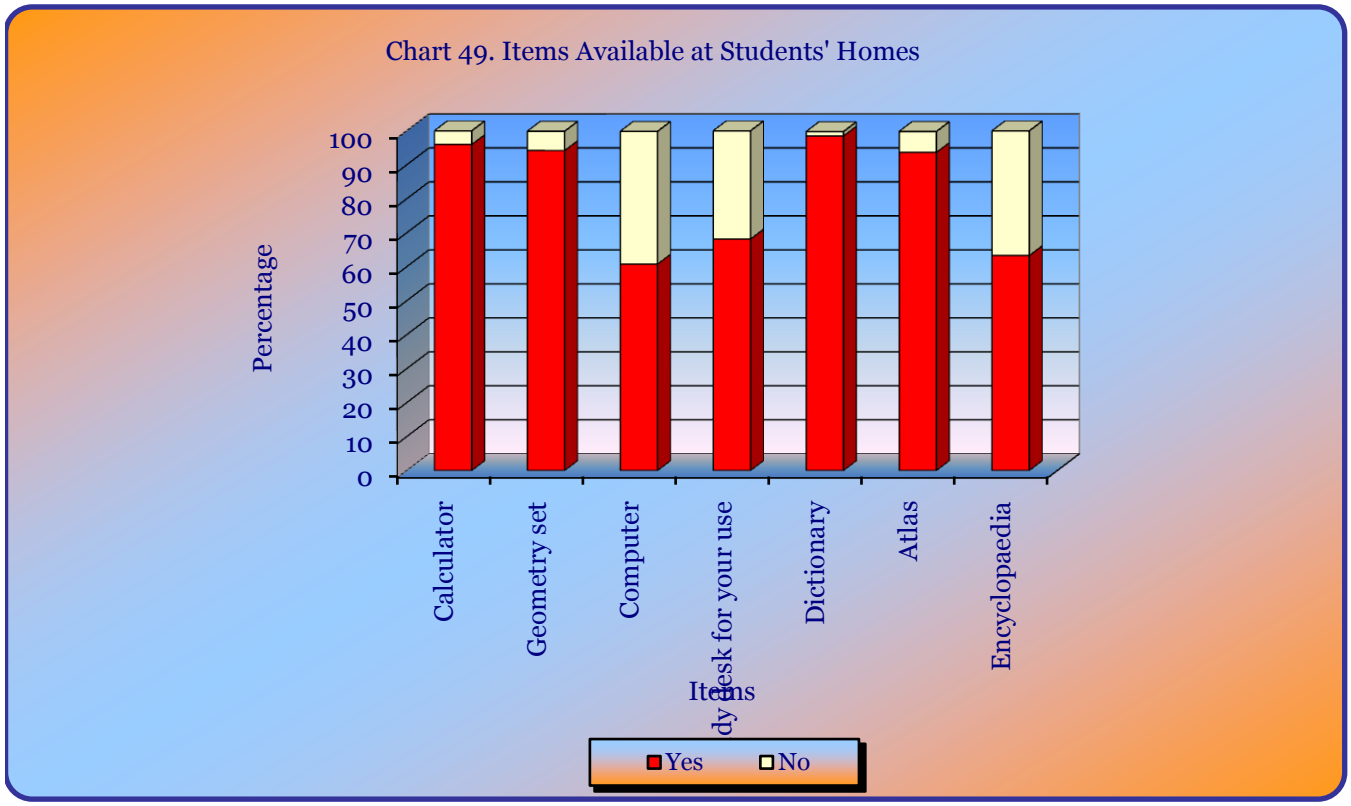
| Activity | Time spent | | | | | | |
|---|---|---|---|---|---|---|---|
| | Total | None | Less than 1 hour | 1-2 hours | 2-4 hours | Over 4 hours | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| | Percentage | | | | | | |
| 1 Watching television or videos | 100 | 11 | 34 | 31 | 13 | 11 | 1 |
| 2 Going to the cinema | 100 | 85 | 3 | 4 | 4 | 3 | 1 |
| 3 Playing computer games | 100 | 54 | 25 | 10 | 5 | 5 | 1 |
| 4 Hanging out with friends | 100 | 32 | 32 | 17 | 8 | 10 | 1 |
| 5 Doing jobs at home | 100 | 21 | 46 | 22 | 6 | 4 | 1 |
| 6 Working at a paid job | 100 | 86 | 3 | 3 | 2 | 4 | 1 |
| 7 Playing sports | 100 | 35 | 25 | 20 | 10 | 8 | 1 |
| 8 Reading a book or magazine | 100 | 20 | 49 | 21 | 6 | 3 | 1 |
| 9 Doing homework (all subjects) | 100 | 3 | 18 | 36 | 28 | 14 | 1 |
| 10 Attending extra lessons (all subjects) | 100 | 68 | 6 | 13 | 9 | 4 | 1 |




The table shows that, of the above activities, students devoted more time to 'doing homework' on a normal school day. Least time was spent 'working at a paid job' and 'going to the cinema'. Approximately one-half (49%) of the students spent less than one hour 'reading a book or magazine'. The data also reveal that 31% and 24% of the sample were engaged in television or videos viewing of 1-2 hours and 2 hours and more, respectively.

## Table 54. Items Available at Students' Homes

| Item | Total | Yes | No |
|---|---|---|---|
| | (1) | (2) | (3) |
| | | Percentage | |
| Calculator | 100 | 96 | 4 |
| Geometry set | 100 | 94 | 6 |
| Computer | 100 | 61 | 39 |
| Study desk for your use | 100 | 68 | 32 |
| Dictionary | 100 | 99 | 1 |
| Atlas | 100 | 94 | 6 |
| Encyclopaedia | 100 | 63 | 37 |

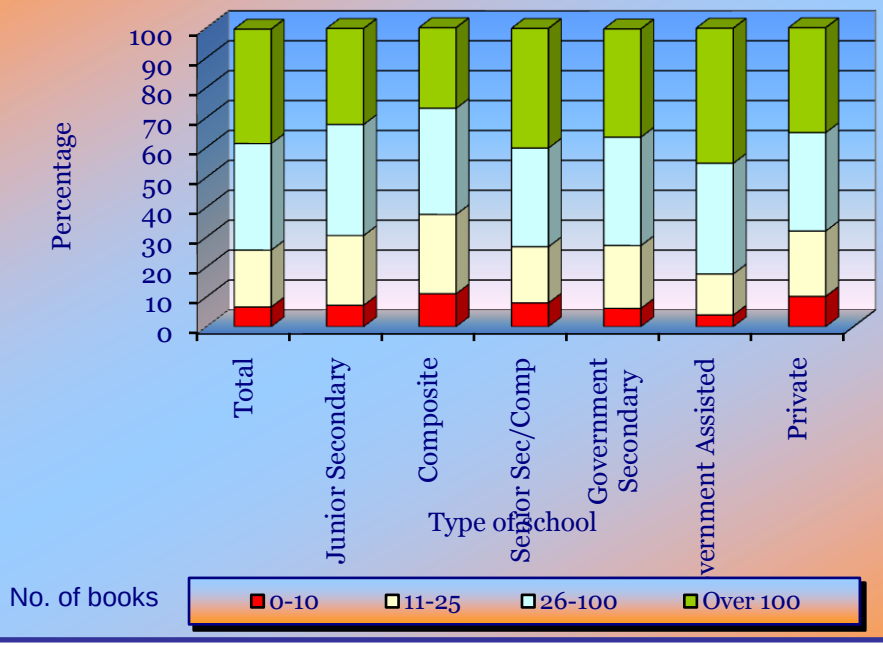



The data show that almost all of the students who participated in the survey had the following items at their homes: dictionary (99%), calculator (96%), atlas (94%) and geometry set (94%). Three-fifths (61%) of the sample stated that they had access to a home computer.

## Table 55. Books at Students' Homes by Type of School

| Type of school | No. of books | | | | |
|---|---|---|---|---|---|
| | Total | 0-10 | 11-25 | 26-100 | Over 100 |
| | (1) | (2) | (3) | (4) | (5) |
| | Percentage | | | | |
| Total | 100 | 7 | 19 | 36 | 38 |
| Junior Secondary | 100 | 7 | 23 | 37 | 32 |
| Composite | 100 | 11 | 27 | 36 | 27 |
| Senior Sec/Comp | 100 | 8 | 19 | 33 | 40 |
| Government Secondary | 100 | 6 | 21 | 36 | 36 |
| Government Assisted | 100 | 4 | 14 | 37 | 45 |
| Private | 100 | 10 | 22 | 33 | 35 |

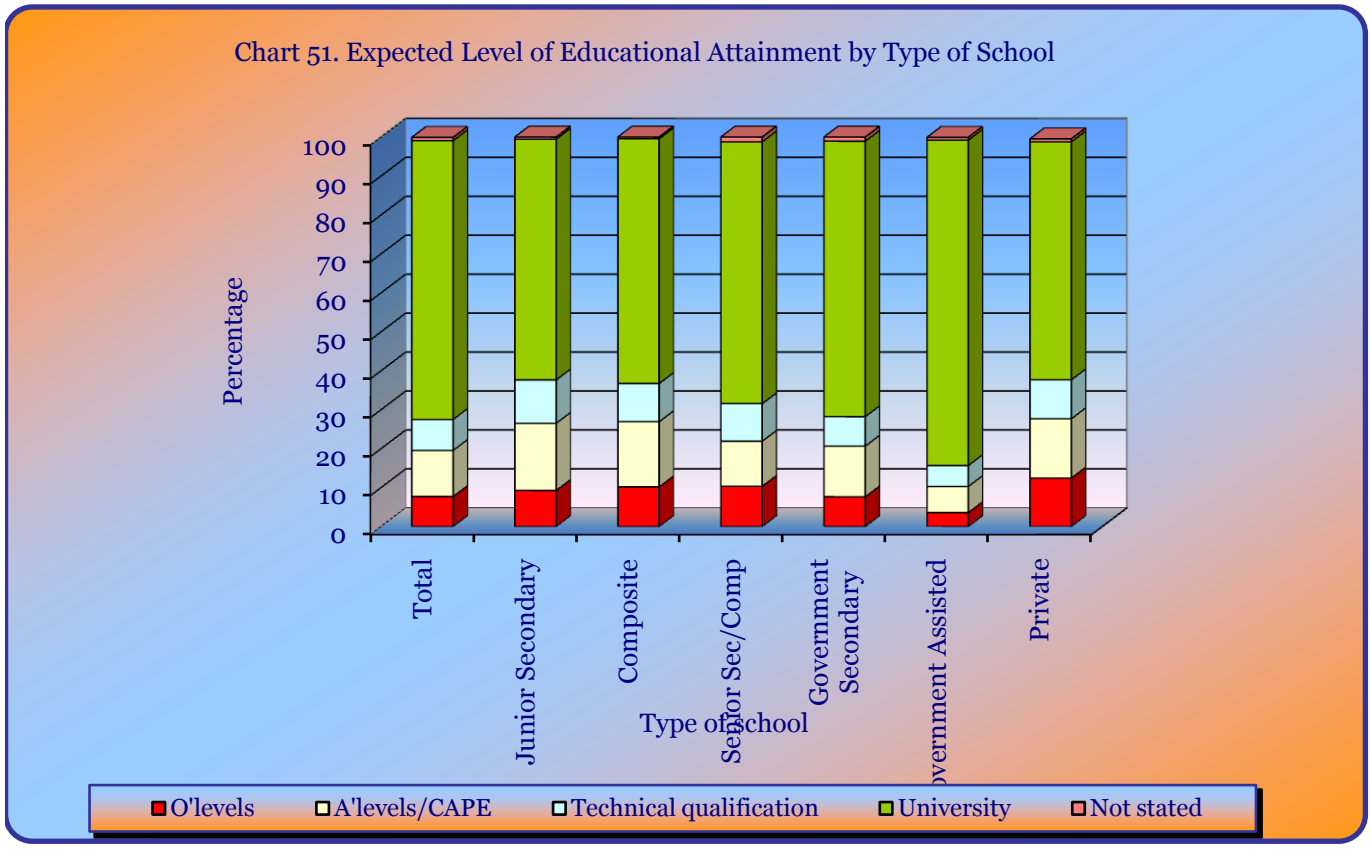
Chart 50. Books at Students' Homes by Type of School




A similar proportion of the students indicated that, excluding magazines and textbooks, they had over 100 books (38%) and 26-100 books (36%) at their homes.

## Table 56. Expected Level of Educational Attainment by Type of School

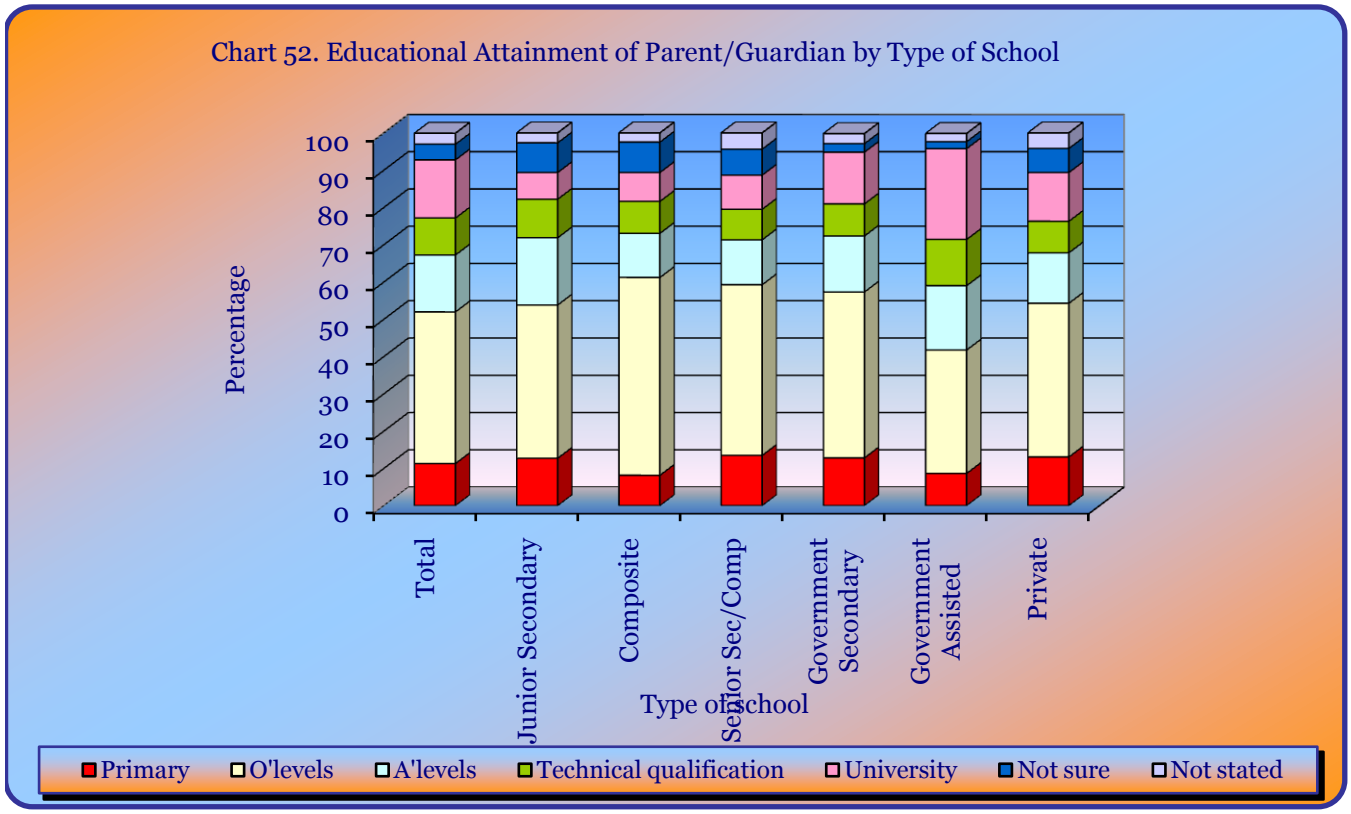
| Type of school | Expected educational attainment | | | | | |
|---|---|---|---|---|---|---|
| | Total | O'levels | A'levels/ CAPE | Technical qualification | University | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Percentage | | | | | |
| Total | 100 | 8 | 12 | 8 | 72 | 1 |
| Junior Secondary | 100 | 9 | 17 | 11 | 62 | 1 |
| Composite | 100 | 10 | 17 | 10 | 63 | 0 |
| Senior Sec/Comp | 100 | 10 | 12 | 10 | 67 | 1 |
| Government Secondary | 100 | 8 | 13 | 8 | 71 | 1 |
| Government Assisted | 100 | 4 | 7 | 5 | 84 | 1 |
| Private | 100 | 12 | 15 | 10 | 61 | 1 |




A significant percentage (72%) of the total sample of secondary schools students expressed a desire to attain a university-level education. The highest percentage of students desirous of obtaining this level of education was observed in the government-assisted (84%) and government secondary schools (71%).

## Table 57. Educational Attainment of Parent/Guardian by Type of School

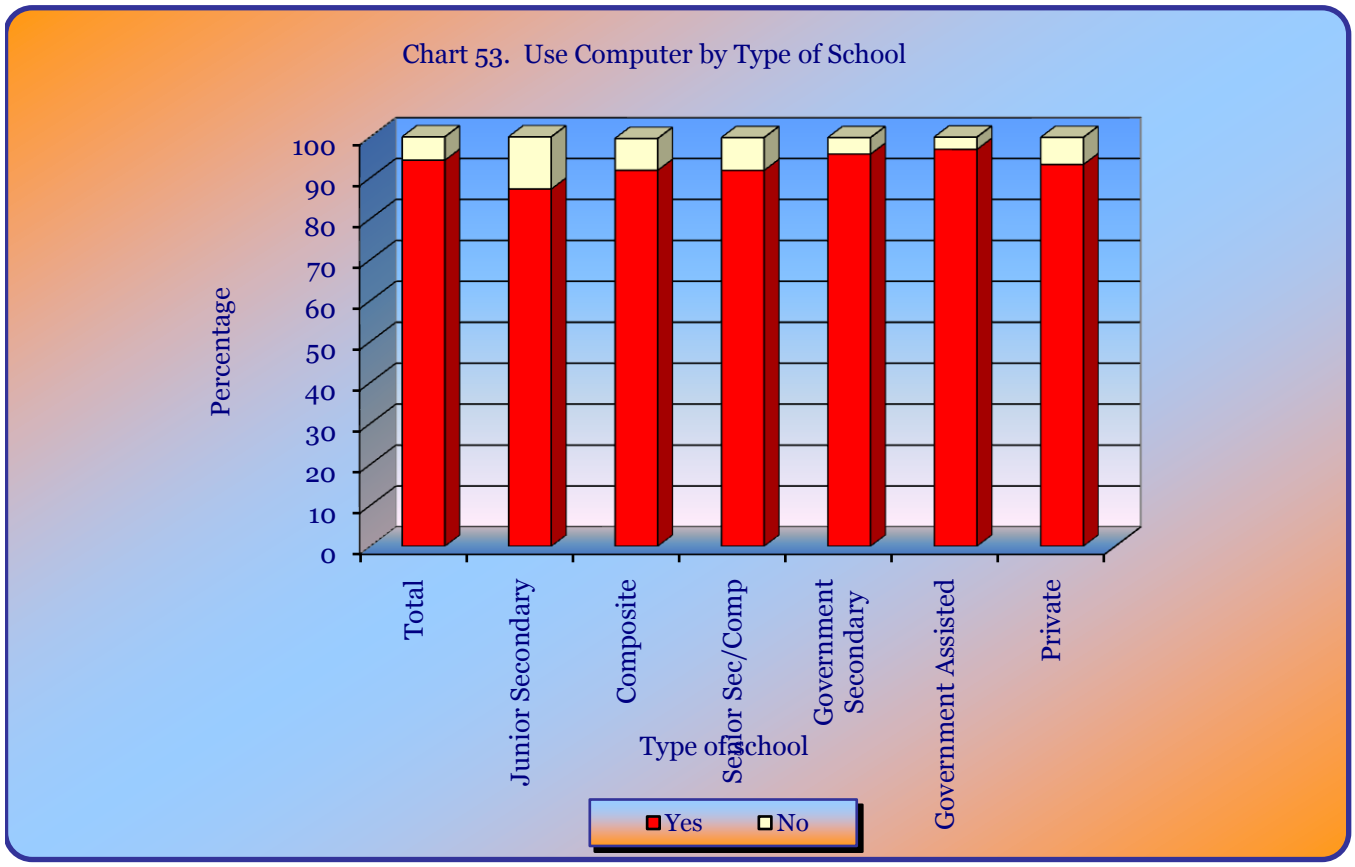
| Type of school | Educational attainment of parent/guardian | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | Primary | O'levels | A'levels | Technical qualification | University | Not sure | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| | Percentage | | | | | | | |
| Total | 100 | 11 | 41 | 15 | 10 | 16 | 4 | 3 |
| Junior Secondary | 100 | 13 | 41 | 18 | 10 | 7 | 8 | 3 |
| Composite | 100 | 8 | 53 | 12 | 9 | 8 | 8 | 2 |
| Senior Sec/Comp | 100 | 13 | 46 | 12 | 8 | 9 | 7 | 4 |
| Government Secondary | 100 | 13 | 44 | 15 | 9 | 14 | 2 | 3 |
| Government Assisted | 100 | 9 | 33 | 17 | 12 | 24 | 2 | 2 |
| Private | 100 | 13 | 41 | 14 | 8 | 13 | 6 | 4 |




Two-fifths (41%) of the students from all schools reported O'levels as their parent's or guardian's highest level of educational attainment. One-quarter (24%) of the students from the government-assisted schools stated that their parents or guardians had attained university-level education.

## Table 58. Use Computer by Type of School

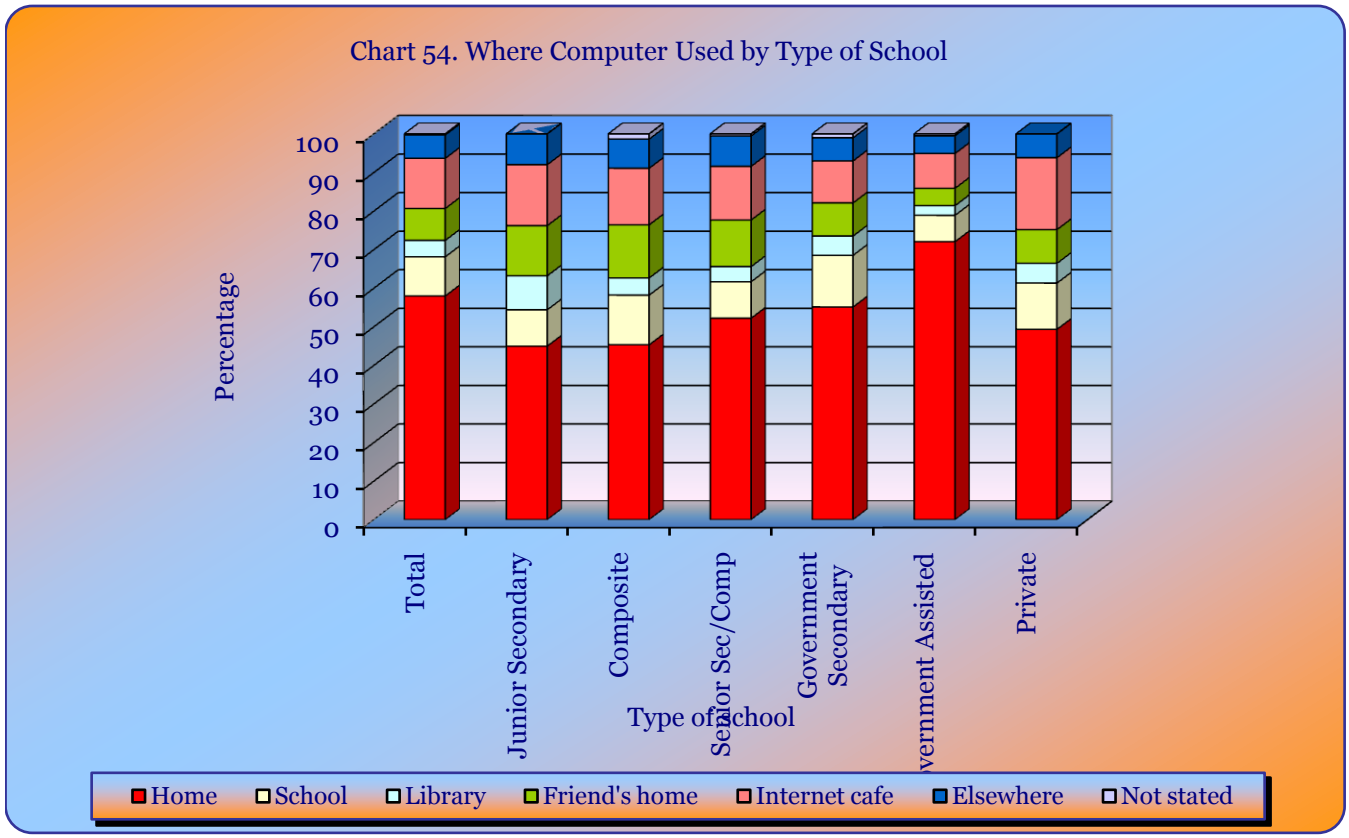
| Type of school | Use computer | | |
|---|---|---|---|
| | Total | Yes | No |
| | (1) | (2) | (3) |
| | | Percentage | |
| Total | 100 | 94 | 6 |
| Junior Secondary | 100 | 87 | 13 |
| Composite | 100 | 92 | 8 |
| Senior Sec/Comp | 100 | 92 | 8 |
| Government Secondary | 100 | 96 | 4 |
| Government Assisted | 100 | 97 | 3 |
| Private | 100 | 93 | 7 |




The majority (94%) of the secondary school students indicated that they used the computer. This pattern of computer usage was observed in all types of schools.

## Table 59. Where Computer Used by Type of School

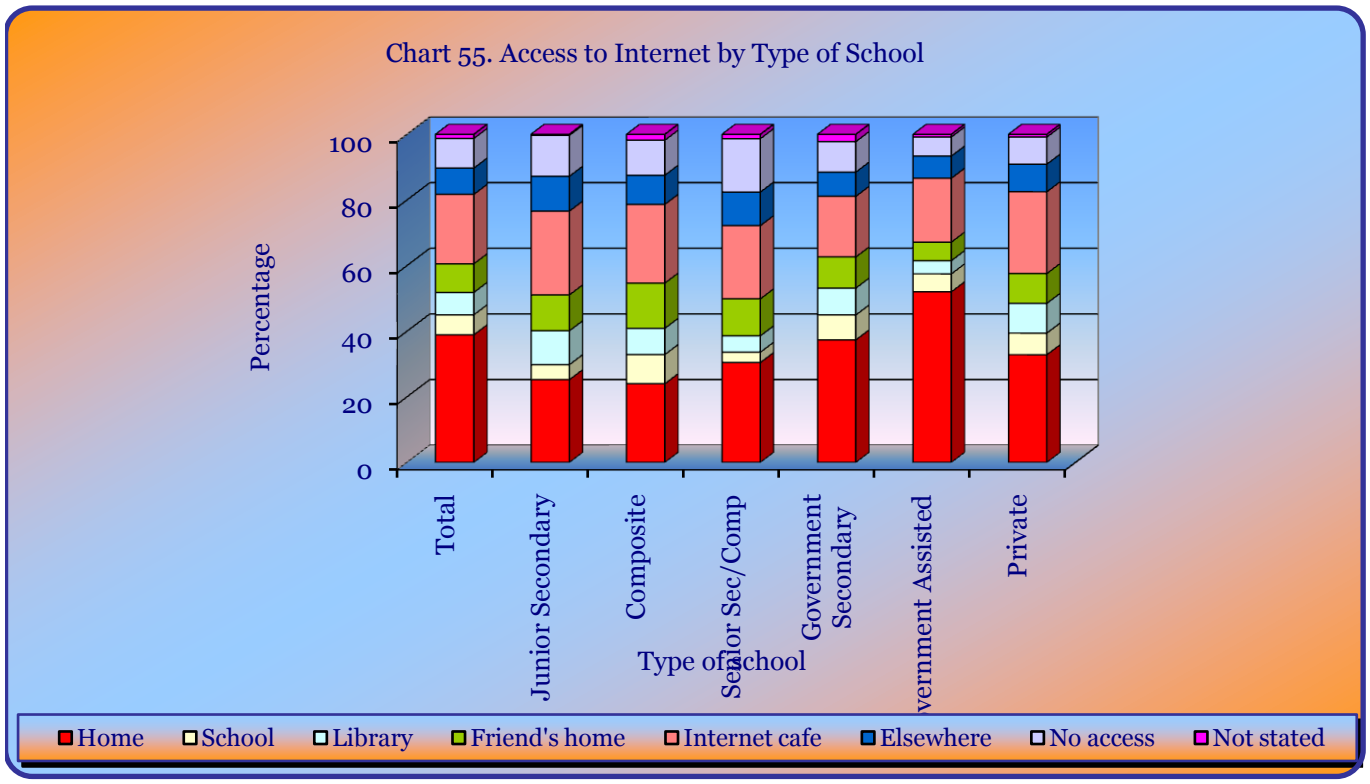
| Type of school | Where computer used | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | Home | School | Library | Friend's home | Internet cafe | Elsewhere | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| | Percentage | | | | | | | |
| Total | 100 | 58 | 10 | 4 | 8 | 13 | 6 | 1 |
| Junior Secondary | 100 | 45 | 9 | 9 | 13 | 16 | 8 | 0 |
| Composite | 100 | 45 | 13 | 4 | 14 | 15 | 8 | 1 |
| Senior Sec/Comp | 100 | 52 | 9 | 4 | 12 | 14 | 8 | 1 |
| Government Secondary | 100 | 55 | 13 | 5 | 9 | 11 | 6 | 1 |
| Government Assisted | 100 | 72 | 7 | 2 | 5 | 9 | 5 | 0 |
| Private | 100 | 49 | 12 | 5 | 9 | 19 | 6 | 0 |




Response data reveal that a relatively large proportion (58%) of the students used the computer mainly at home. The data also show that the highest percentage (72%) of computer usage at home was recorded by students in government-assisted schools.

## Table 60. Access to Internet by Type of School

| Type of school | Access to internet - percentage | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | Home | School | Library | Friend's home | Internet cafe | Elsewhere | No access | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| | Percentage | | | | | | | | |
| Total | 100 | 39 | 6 | 7 | 9 | 21 | 8 | 9 | 1 |
| Junior Secondary | 100 | 25 | 5 | 10 | 11 | 26 | 11 | 12 | 0 |
| Composite | 100 | 24 | 9 | 8 | 14 | 24 | 9 | 11 | 2 |
| Senior Sec/Comp | 100 | 30 | 3 | 5 | 11 | 22 | 10 | 16 | 1 |
| Government Secondary | 100 | 37 | 8 | 8 | 9 | 18 | 7 | 9 | 2 |
| Government Assisted | 100 | 52 | 5 | 4 | 6 | 19 | 7 | 6 | 1 |
| Private | 100 | 33 | 7 | 9 | 9 | 25 | 8 | 8 | 1 |




The table above shows that students accessed the Internet mainly at home (39%) followed by internet cafe (21%). Less than ten percent (6%) of the students had access to the internet at school. By type of school fifty percent (52%) of the students in the government-assisted schools used the internet at home. A quarter of the students from the junior secondary (25%) and composite schools (24%) had access to the internet at home and an even proportion at internet cafes.

## Table 61. Use Computer for Mathematics Exercises

| Exercise | Frequency | | | | | |
|---|---|---|---|---|---|---|
| | Total | Once a week | Once a month | A few times a year | Never | Not stated |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Percentage | | | | | |
| Email other students about mathematics | 100 | 5 | 3 | 6 | 85 | 2 |
| Look up ideas and information for mathematics | 100 | 12 | 11 | 17 | 58 | 2 |
| Process and analyse data | 100 | 20 | 15 | 17 | 46 | 3 |
| Write reports | 100 | 17 | 18 | 22 | 42 | 2 |

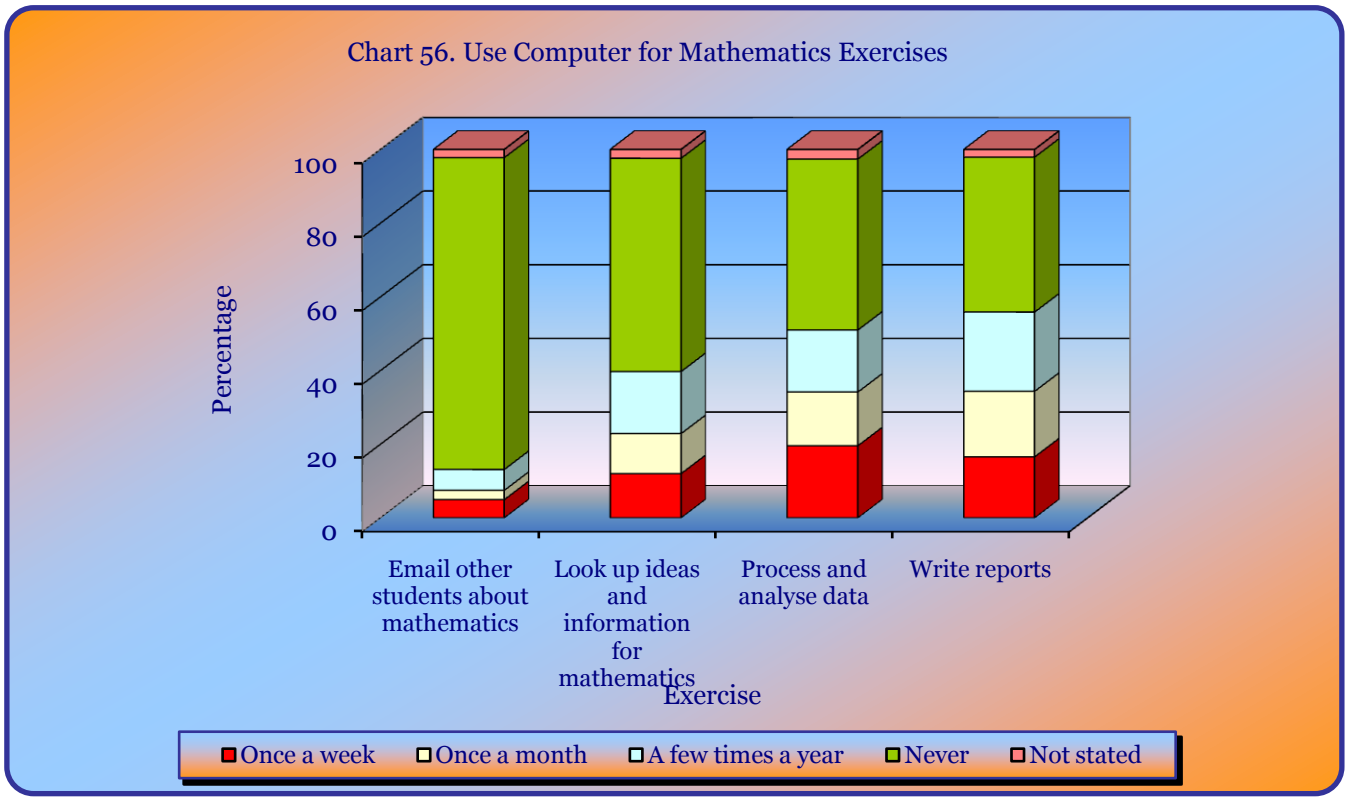



Table 61 reveals that a significant percentage (85%) of students never emailed one another about mathematics and over one half (58%) never looked up ideas and information on the subject. The most frequently performed exercises were to process and analyse data and write reports.