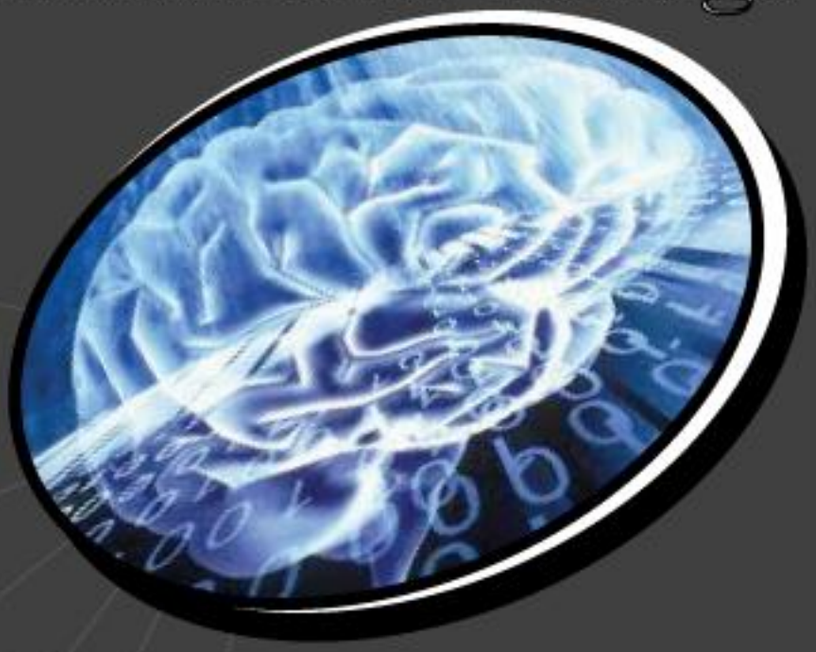
Republic of Trinidad and Tobago



Survey of Science in Secondary Schools, 2011

NIHERST

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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 Science in Secondary Schools, 2011.

The Survey of Science in Secondary Schools, 2011 was a two-part enquiry of teachers and students in Forms 1 to 5 in government, government-assisted and private secondary schools. The major objectives of this study were to compile data on the profile of secondary school science teachers, training needs, choice of career and difficulties encountered in teaching science. The adequacy and availability of teaching aids and textbooks, teaching and evaluation methods, students' attitudes towards science and careers in science were also addressed in the enquiry.

The teaching and understanding of science in schools are essential for promoting scientific literacy in society and the development of future scientists and engineers. The results of this study are therefore intended to provide empirical data on key education indicators necessary for improving the quality of science education to the benefit of all stakeholders.

The survey results in this report have been tabulated by type of school. However, data can also be provided by educational district on request. The responses from teachers are shown in tables 1 to 55 and those from students in tables 56 to 80.

NIHERST wishes to thank the Ministry of Education for approving the conduct of this study in secondary schools. We also acknowledge the input of the curriculum officers of the core science subjects in the Ministry of Education and the co-operation of teachers and students in state, state-assisted and private institutions who willingly provided the data collated in this report.

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Data Highlights

Teachers

Profile of secondary schools science teachers

- Of the sample of 144 science teachers, 29% were males and 71% were females, representing a male to female ratio of 1 to 2.5. Females out-numbered their male counterparts in all age groups and types of school.

- Most science teachers (39%) overall, were between 30-39 years of age followed by one-third (33%) in the 20-29 age cohort. The modal age of science teachers in government secondary schools (40%) was between 30-39 years while the largest proportion in government-assisted (49%) and private (38%) schools was between 20-29 years of age.

- A significant majority (80%) of secondary school science teachers, especially amongst those from state (84%) and state-assisted (80%) institutions, reported a first degree as their highest level of education while 10% possessed a higher degree qualification.

- A half (54%) of the sample of secondary school science teachers had no professional qualification while approximately two-fifths (37%) possessed a diploma in education. A higher percentage (45%) of science teachers in state secondary schools obtained the diploma in education compared to their counterparts in state-assisted (37%) and private (5%) schools.

- One-fifth (22%) of the science teachers taught a combination of Biology and Integrated Science while a similar percentage (19%) taught Integrated science only. Fifteen percent (15%) taught both Chemistry and Integrated Science while 11% and 10% taught Physics and Chemistry respectively.

- Most male teachers were engaged in teaching Physics (24%), Integrated Science (21%), and Biology and Integrated Science (17%) while females taught Biology (25%) and Chemistry (19%) with Integrated Science in each case, and Integrated Science (18%).

- Two-fifths (39%) of the sample of science teachers majored in Chemistry, a quarter (25%) in Biology and approximately one-fifth (17%) in Physics.

- Forty-nine percent (49%) of the science teachers, especially in state-assisted schools (66%), selected teaching as their career of first choice while a similar percentage (51%) did not.

- The majority (72%) of science teachers overall, and similarly by type of school and gender indicated that they were not desirous of changing to another career.

Syllabus content and instructional time

- Overall, a significant percentage (85%) of science teachers, especially in state (85%) and state-assisted (95%) schools were very familiar with the Caribbean Secondary Education Certificate (C.S.E.C.) syllabus.

- Two-fifths (42%) of the science teachers in secondary schools indicated that they expected to complete between 81-100% of the syllabus for the academic year 2010/2011 and approximately a quarter (23%) between 61-80%.

- Seventy-one percent (71%) of form 5 teachers expected to complete between 81-100% of the syllabus by the end of the academic year, 2010/2011.

- The most frequently performed scientific activity was to explain scientific principles and concepts. The majority of teachers indicated that students conducted experiments (81%), made observations and presented findings and interpretations (71%), and, formulated and tested hypotheses (70%), at some lessons.

Time spent outside the formal school day

- Teachers in general, devoted more time to planning future class sessions and preparing or grading student exams or homework. In addition, science teachers in private secondary schools spent considerable time on administrative tasks including staff meetings.

- Over a third (37%) of the teachers spent less than one hour on professional reading and development, while one-quarter (25%) spent 1-2 hours.

- Forty-six percent (46%) of the sample of science teachers attended workshops in curriculum and teaching methods while one-third (32%) was exposed to workshops in assessment.

Homework assignment

- Over a half (58%) of the teachers assigned science homework once or twice a week while one-fifth did so everyday (22%) and 19% sometimes.

- A relatively larger proportion of teachers in private (29%) and state-assisted (27%) schools assigned science homework every day compared to 18% in state schools.

Adequacy and use of textbooks

- In general, a significant majority (90%) of the sample of science teachers, especially in forms 5 (96%) and 1 (94%), used textbooks to teach science.

- Overall, 60% of the teachers in secondary schools stated that the prescribed science textbooks were adequate while 30% disagreed and 10% did not use them.

- In the lower forms, a relatively larger proportion of the teachers indicated that the Caribbean Interactive Science series, Book 1 - Book 3 were adequate for teaching science compared to teachers who used the Lower Secondary Science series, Books 1 and 2.

- Of the more frequently used texts in forms 4 and 5, adequacy was recorded as follows: CXC Integrated Science (75%), Biology: A Concise Revision Course for CXC (64%), Chemistry for CSEC (75%) and Heinemann Physics for CXC (80%).

Adequacy and use of teaching resources

- Twenty-two percent (22%) and 37% of the science teachers who participated in the survey indicated that they used the Internet, a great deal and quite a lot respectively, as a teaching resource while one-third (35%) used it a little and 6% did not use it.

- Teachers in government-assisted secondary schools used the Internet as a teaching resource more than their counterparts in government and private schools.

- All public (100%), and 71% of the private schools had science laboratories. However, a half (51%), especially in the state-assisted schools (67%), indicated that the laboratories were not well equipped.

- Two-fifths of the sample of science teachers had a lot (41%) and some (40%) influence on the subject matter to be taught. However, by comparison teachers' influence declined on the acquisition of specific textbooks, and materials and supplies.

Assessment methods

- In assessing students' work, science teachers assigned the most weight to teacher-made tests and responses from students in class.

- Laboratory work and projects also received high ratings from the majority of science teachers.

Issues that limited teaching of the subject

- A substantial proportion of teachers reported that lack of parental interest in children's learning and progress (65%) and disruptive students (52%), mainly in government schools, limited their teaching of science, a great deal and quite a lot.

- A relatively large percentage (51%) of teachers in government schools identified student absenteeism, and students who come from a wide range of backgrounds, as factors that impacted considerably on teaching, together with inadequate physical facilities in all schools.

Teachers view on students' learning

- Almost all (96%) of the science teachers in both public and private secondary schools agreed that: an understanding of how students learn was essential for teaching science, together with some students had a natural talent for science and others did not (74%), and too often the class was intrigued by scientific demonstrations while not grasping the underlying principles (61%).

- Three-quarters (75%) of the teachers disagreed that students were not interested in science at the secondary school level.

Students

- The majority (53%) of form 1 students was 12 years and under, while students in forms 2 (47%) and 3 (46%) were 13 and 14 years of age respectively; this trend continued whereby in the higher forms 4 (53%) and 5 (85%) most students were 15 and 16 years and over respectively.

- Overall, the largest proportion (35%) of the students, who responded to the survey, reported a frequency of 4 science periods each week while 30% indicated 5 periods, mainly in form 5.

- Most students in forms 1 (83%) and 2 (77%) used the New Lower Secondary Science Books 1 and 2 respectively. Caribbean Interactive Science Book 3 (64%) was most popular amongst form 3 students. Students in the higher forms 4 and 5, however, used a variety of science textbooks.

- In general, the majority (69%) of students, as in the case of the teachers (60%), reported that the prescribed science textbooks were adequate; 16% stated they were inadequate; and 11% useless.

- Two-fifths (42%) of the students brought their science textbooks to school, every time while one-third (34%) stated sometimes.

- Over a half (57%) of the responding sample of students indicated that teachers assigned science homework sometimes while one-third (32%) stated every time. A higher percentage (37%) of students in state-assisted schools, especially in form 4 (56%), reported homework every time compared to 29% and 28% in state and private institutions respectively.

- The response data reveal that 51% of students did their science homework, every time, and 41%, sometimes.

- Three-fifths (59%) of the students in government-assisted secondary schools did their homework every time compared to 52% and 45% in private and government schools respectively.

- The main reasons given by students for not doing their science homework every time were difficulty with the science homework (33%), not inclined to (27%) and lack of time (21%).

- In seeking help with science homework, students identified their parents or guardians (28%), classmates or friends (28%) and teachers (23%) as their main sources of assistance.

- A substantial percentage (69%) of the responding sample of secondary school science students did not take extra lessons or tutoring.

- Overall, two-thirds (65%) of the students, especially in forms 4 (76%) and 5 (77%), attended extra lessons to do better which was also seen as the desired outcome by a larger proportion of students in state-assisted secondary schools (76%) compared to state (57%) and private (62%) schools.

- As Integrated Science is taught in the lower forms, especially in the state institutions, most students in forms 1 to 3 enjoyed this combination of the biological and physical sciences. However, in pursuing studies in core sciences, most students in forms 4 and 5 enjoyed Biology, followed by Chemistry and Physics to a lesser extent.

- Four-fifths (81%) of the students reported that their schools had no science club. The state-assisted institutions had a higher percentage (36%) of science clubs compared to 19% in state schools.

- Of the 19% of students who indicated that their schools had science clubs only 15% were members.

- Students copied notes from the board or teacher (88%) and discussed completed homework (67%), most frequently in their science classes.

- Approximately a half of the students related science to everyday problems (52%), presented and discussed findings (52%), had a quiz or test (52%), worked in groups (49%) and worked individually using textbook (48%), always and pretty often.

- A significant percentage of the students indicated that learning science will help them in their daily lives (91%) and that they liked science (81%).

- Approximately three-quarters agreed: they should do well in science to get the job they wanted (75%), they would have liked science much more if it were not so difficult (72%), and they usually did well in science (72%).

- Students also indicated: they would like a job that involved science (62%), they needed to do well in science to please their parents (59%), they would like to take more science in school (56%), and they needed science to learn other school subjects (56%).

- Students devoted more time to doing homework on a normal school day. A quarter of the students spent three hours and more hanging out with friends (24%) and watching television or videos (24%).

- Most students (87%) had access to a home computer, had science books (73%), other than textbooks, and study desks (69%) at their homes.

- Overall, three-fifths (60%) of the students read science books other than their textbooks. Students in the higher forms, 4 (70%) and 5 (68%), read science books more than those in the lower forms, 1 (57%), 2 (54%) and 3 (53%).

- Most students (68%) watched science programmes on television. Television viewing of science programmes was reported by 75% of form 4 and 70% of form 5 students.

- A significant percentage (73%) of the sample of secondary school science students expressed a desire to attain a university-level education.

- A quarter of the parents/guardians of students from all schools attained O'levels/C.S.E.C. (27%) and university degrees (25%) as their highest level of education. Parents/guardians of the students in state-assisted (31%) and private (28%) institutions had achieved university-level education compared to 21% in state schools. This trend is similar to that of the intended educational achievement of students.

Methodology

Introduction

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

Objectives

The results of this study are intended to provide data on key education indicators necessary for improving the quality of science education. This enquiry focused on the quality of teaching, available resources and students' approach towards science by monitoring:

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

Scope

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

Coverage

The frame for the study was obtained from the Ministry of Education. It contained a total of 181 public and private secondary schools in the various educational districts of Trinidad and Tobago. Of the 181 secondary schools surveyed, 24, mainly private schools, were out of operation or did not conduct any science classes. The following table shows the number of selections and response rate by type of school.

Response by Type of Secondary School

Type of secondary school	No. selected	No. responded	Responded %
Total	157	144	92
1. Government	89	82	92
2. Government-assisted	42	41	98
3. Private	26	21	81

Sample Design

The list of secondary schools was divided into three strata - government, government-assisted and private schools. 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 subsequently forms 3, 4 and 5 from the next consecutive schools. This process was repeated until the schools in the stratum were exhausted. The method for selecting the forms from strata two and three was similar to that described for stratum one. After the forms were selected all forms 1 and 2 were assigned the subject of integrated science, while forms 3 to 5 in each stratum were assigned Integrated Science, Biology, Chemistry or Physics. The science teacher and all students of the selected form were surveyed on the teaching of the assigned science subject. Through this selection process, a representative sample of one hundred and forty-four teachers and approximately three thousand and four hundred students from public and private secondary schools responded to the enquiry.

Data Collection

Two questionnaires, one for teachers and another for students of the selected forms, were designed to achieve the survey objectives. They were then delivered to each school and subsequently monitored by a group of experienced interviewers. Data collection commenced in March, 2011 and was completed by June, 2011.

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 then captured in the Statistical Package for the Social Sciences (SPSS) version 16.0 software which was used to produce the tabulations in this report.

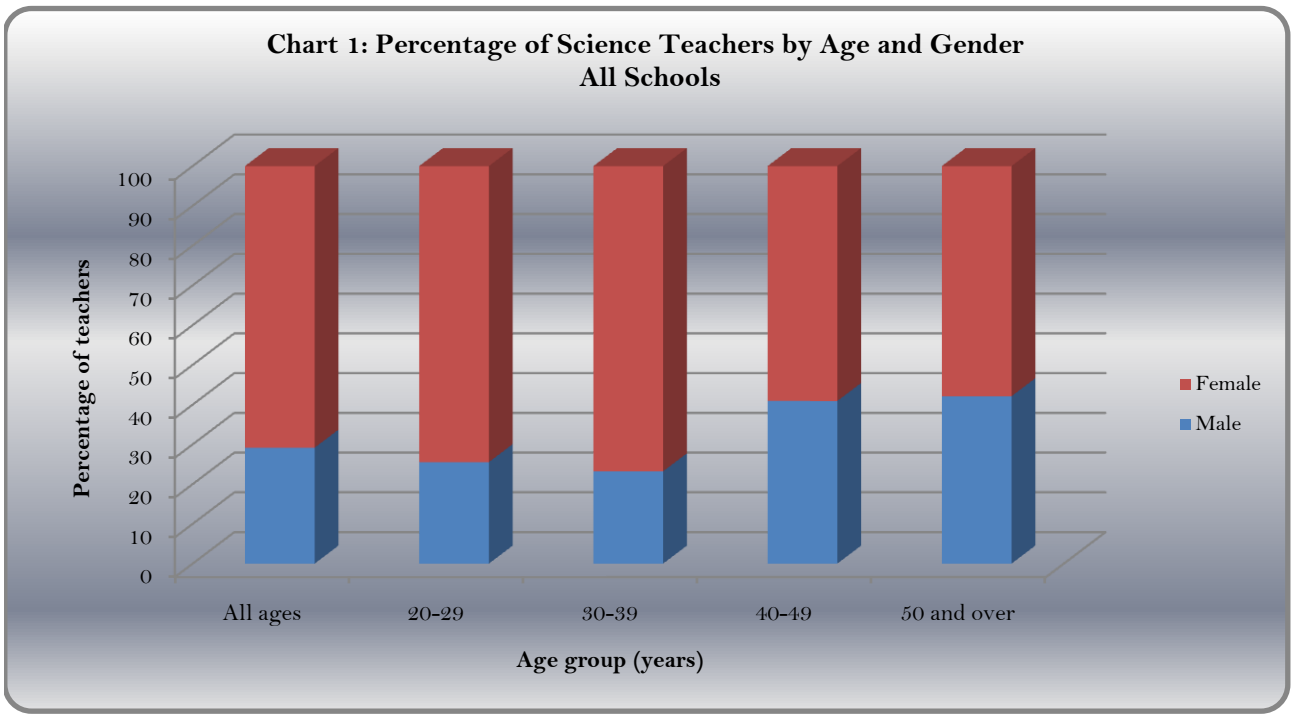
Results

The results of the survey are presented for the sample of respondents, teachers and students separately, in the various tabulations and graphics which follow.

Table 1: Distribution of Science Teachers by Type of Secondary School, Age Group and Gender

Type of secondary school	Age group (years)	Gender					
		Total		Male		Female	
		No.	Percentage	No.	Percentage	No.	Percentage
		(1)	(2)	(3)	(4)	(5)	(6)
All schools	All ages	144	100	42	29	102	71
	20-29	47	100	12	26	35	74
	30-39	56	100	13	23	43	77
	40-49	22	100	9	41	13	59
	50 and over	19	100	8	42	11	58
Government	All ages	82	100	26	32	56	68
	20-29	19	100	5	26	14	74
	30-39	33	100	8	24	25	76
	40-49	17	100	8	47	9	53
	50 and over	13	100	5	38	8	62
Government-assisted	All ages	41	100	10	24	31	76
	20-29	20	100	4	20	16	80
	30-39	16	100	4	25	12	75
	40-49	3	100	1	33	2	67
	50 and over	2		1	50	1	50
Private	All ages	21	100	6	29	15	71
	20-29	8	100	3	38	5	63
	30-39	7	100	1	14	6	86
	40-49	2	100	0	0	2	100
	50 and over	4	100	2	50	2	50

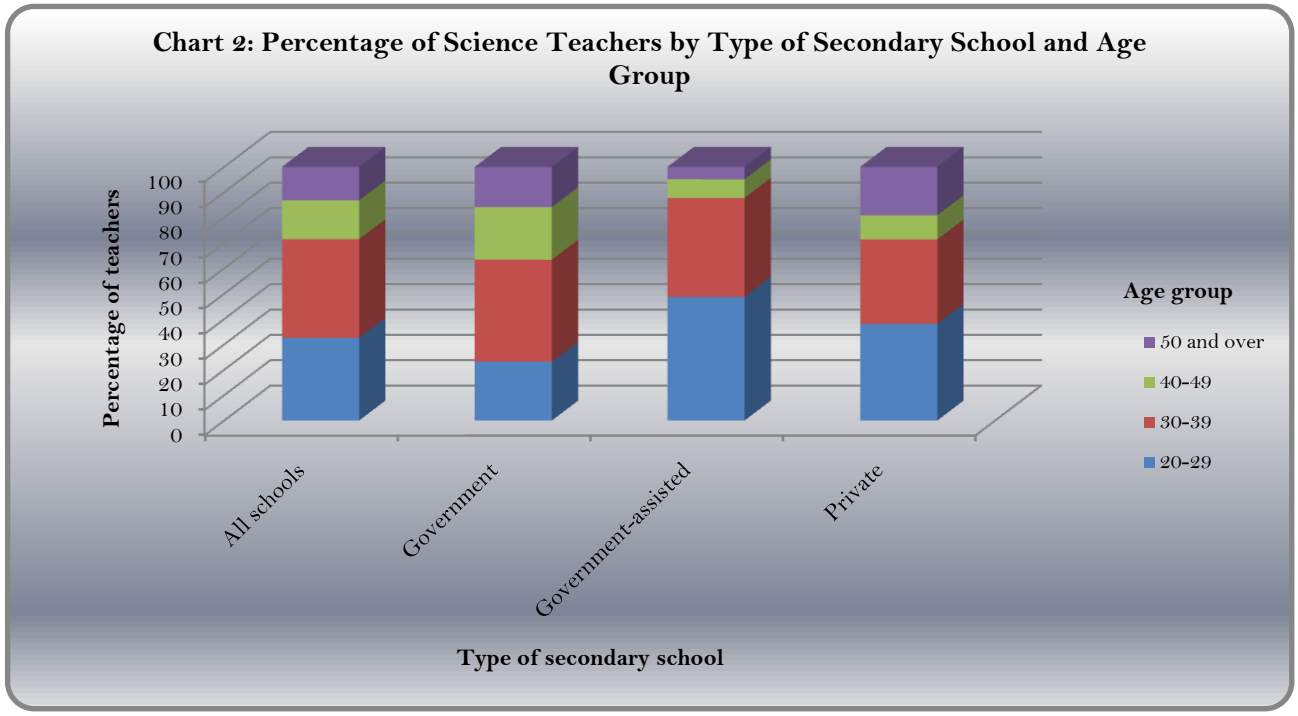
Tables 1 and 2 show the distribution of the age and gender characteristics of science teachers in public and private secondary schools who responded to the survey. Of the sample of 144 teachers, 29% were males and 71% were females, representing a male to female ratio of 1 to 2.5. Females out-numbered their male counterparts in all age groups and types of school (Table 1). In terms of age distribution, the largest percentage (39%) of science teachers overall was observed in the 30-39 age group followed by one-third (33%) in the 20-29 age cohort (Table 2). However, by type of school the modal age of science teachers in government secondary schools (40%) was between 30-39 years while the largest proportion in government-assisted (49%) and private (38%) schools was between 20-29 years of age.



Source: Table 1

Table 2: Percentage of Science Teachers by Type of Secondary School, Age Group within Gender

Type of secondary school	Age group (years)	Gender		
		Total	Male	Female
		(1)	(2)	(3)
Total	All ages	100	100	100
	20-29	33	29	34
	30-39	39	31	42
	40-49	15	21	13
	50 and over	13	19	11
Government	All ages	100	100	100
	20-29	23	19	25
	30-39	40	31	45
	40-49	21	31	16
	50 and over	16	19	14
Government-assisted	All ages	100	100	100
	20-29	49	40	52
	30-39	39	40	39
	40-49	7	10	6
	50 and over	5	10	3
Private	All ages	100	100	100
	20-29	38	50	33
	30-39	33	17	40
	40-49	10	0	13
	50 and over	19	33	13

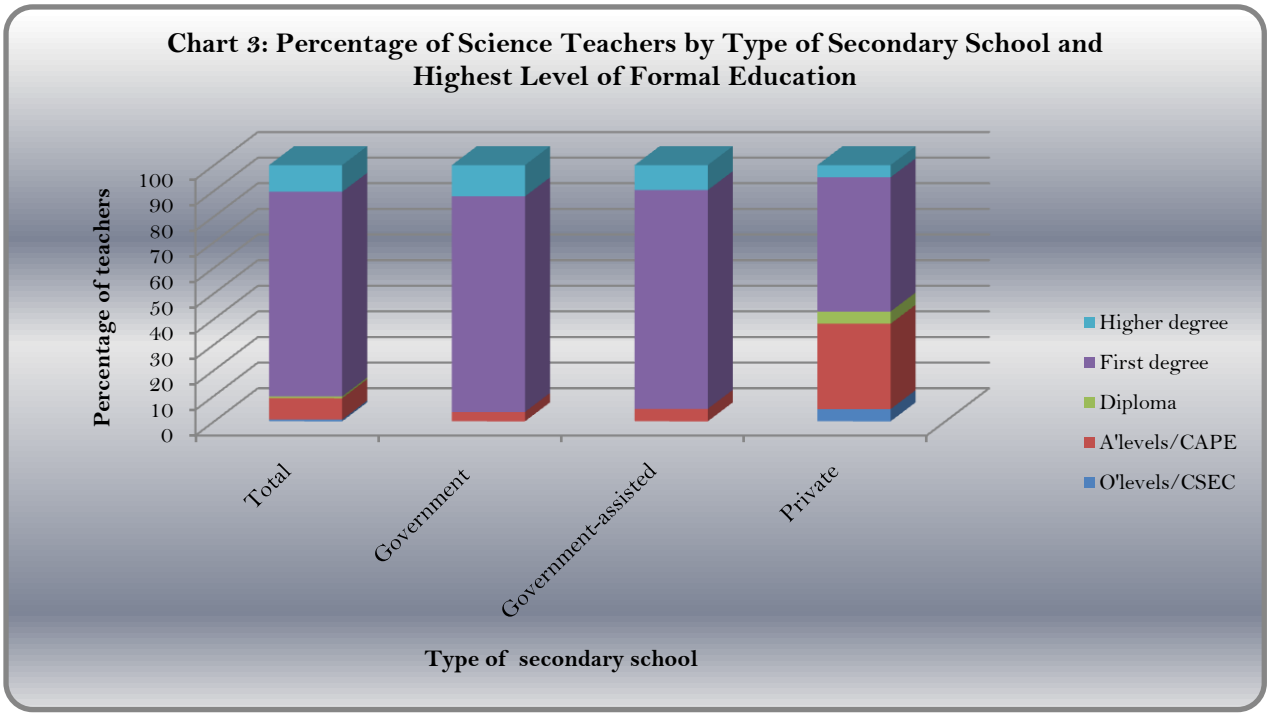


Source: Table 2

Table 3: Distribution of Science Teachers by Type of Secondary School and Highest Level of Formal Education

Type of secondary school	Highest level of formal education											
	Total		O'levels/CSEC		A'levels/CAPE		Diploma		First degree		Higher degree	
	No.	Percent-age	No.	Percent-age	No.	Percent-age	No.	Percent-age	No.	Percent-age	No.	Percent-age
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Total	144	100	1	1	12	8	1	1	115	80	15	10
Government	82	100	0	0	3	4	0	0	69	84	10	12
Government-assisted	41	100	0	0	2	5	0	0	35	85	4	10
Private	21	100	1	5	7	33	1	5	11	52	1	5

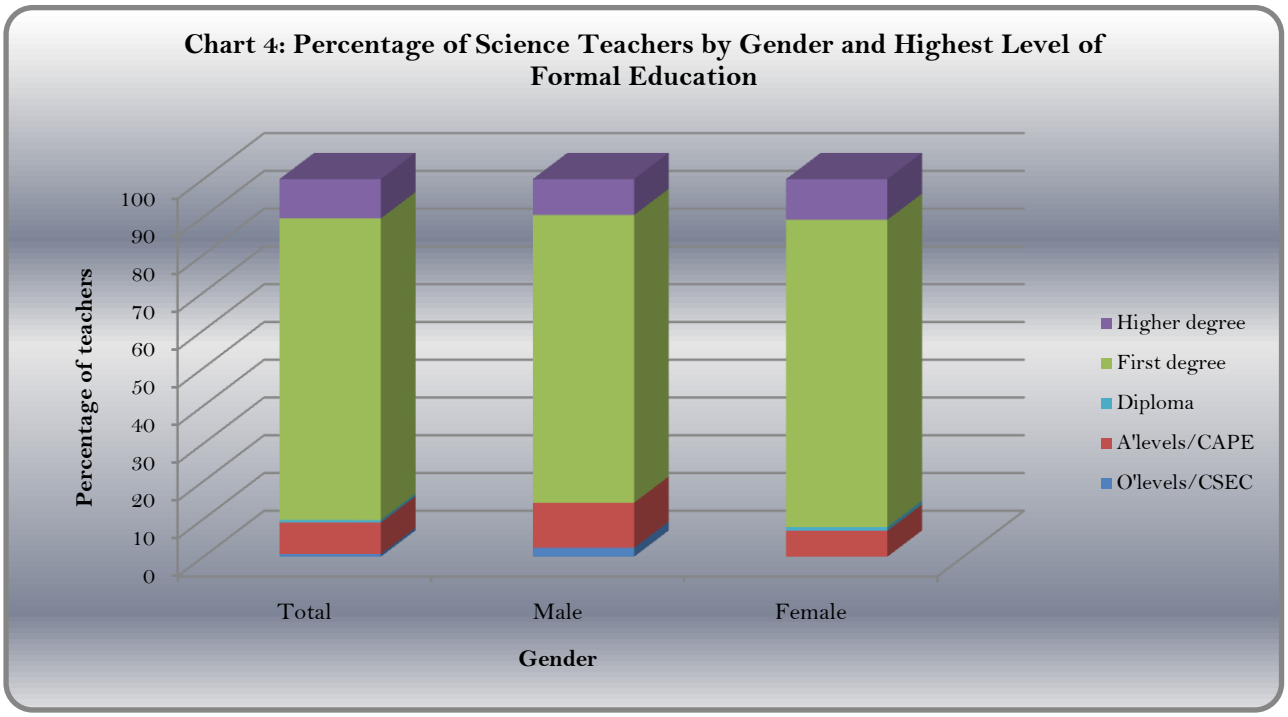
A significant majority (80%) of secondary school science teachers, especially amongst those from state (84%) and state-assisted (80%) institutions, reported a first degree as their highest level of education while 10% possessed a higher degree qualification. In the case of private secondary schools, 52% of their science teachers graduated with a first degree and 33% possessed A'levels/CAPE. Educational attainment at graduate level of all science teachers was similar by gender (Table 7) and age groups (Table 8).



Source: Table 3

Table 4: Distribution of Science Teachers by Gender and Highest Level of Formal Education

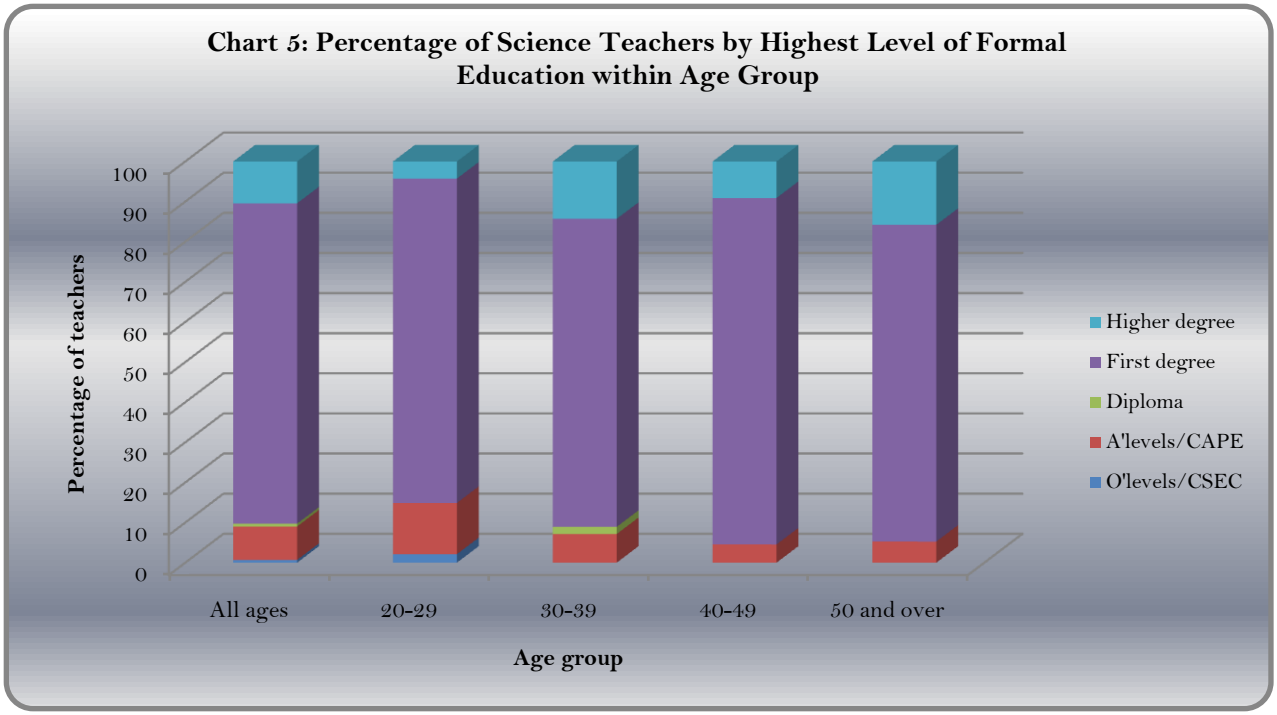
Highest level of formal education	Gender					
	Total		Male		Female	
	No.	Percentage	No.	Percentage	No.	Percentage
	(1)	(2)	(3)	(4)	(5)	(6)
Total	144	100	42	100	102	100
O'levels/CSEC	1	1	1	2	0	0
A'levels/CAPE	12	8	5	12	7	7
Diploma	1	1	0	0	1	1
First degree	115	80	32	76	83	81
Higher degree	15	10	4	10	11	11



Source: Table 4

Table 5: Distribution of Science Teachers by Highest Level of Formal Education within Age Group

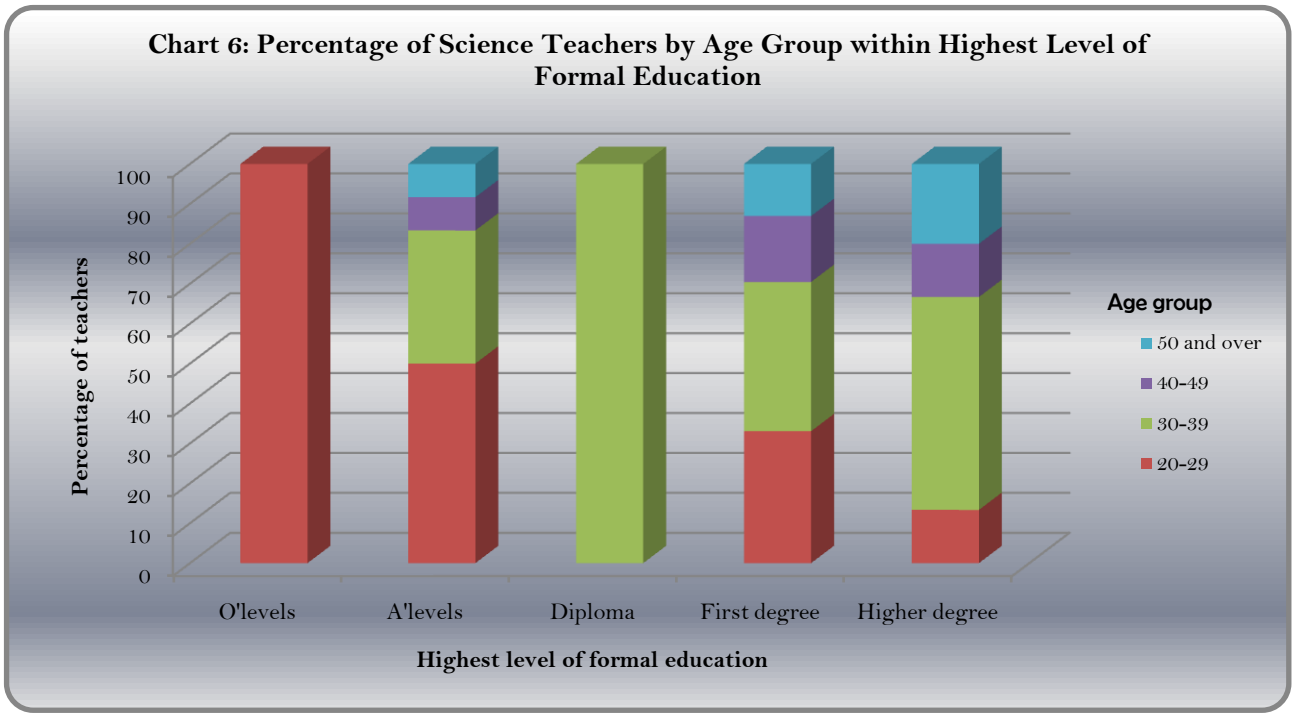
Age group (years)	Highest level of formal education											
	Total		O'levels/CSEC		A'levels/CAPE		Diploma		First degree		Higher degree	
	No.	Percent-age	No.	Percent-age	No.	Percent-age	No.	Percent-age	No.	Percent-age	No.	Percent-age
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
All ages	144	100	1	1	12	8	1	1	115	80	15	10
20-29	47	100	1	2	6	13	0	0	38	81	2	4
30-39	56	100	0	0	4	7	1	2	43	77	8	14
40-49	22	100	0	0	1	5	0	0	19	86	2	9
50 and over	19	100	0	0	1	5	0	0	15	79	3	16



Source: Table 5

Table 6: Percentage of Science Teachers by Age Group within Highest Level of Formal Education

Age group (years)	Highest level of formal education					
	Total	O'levels/CSEC	A'levels/CAPE	Diploma	First degree	Higher degree
	(1)	(2)	(3)	(4)	(5)	(6)
All ages	100	100	100	100	100	100
20-29	33	100	50	0	33	13
30-39	39	0	33	100	37	53
40-49	15	0	8	0	17	13
50 and over	13	0	8	0	13	20



Source: Table 6

Table 7: Percentage of Science Teachers by Type of Secondary School and Highest Professional Qualification

Type of secondary school	Highest professional qualification						
	Total	None	Teacher's training diploma	Certificate in education	Diploma in education	B.Ed.	M.Ed./Ph.D.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Total	100	54	3	1	37	3	2
Government	100	45	4	1	45	4	1
Government-assisted	100	59	2	0	37	2	0
Private	100	81	5	0	5	0	10

A half (54%) of the sample of secondary school science teachers had no professional qualification while approximately two-fifths (37%) possessed a diploma in education (Table 7). By type of school, a higher percentage (45%) of science teachers in state secondary schools obtained the diploma in education compared to their counterparts in state-assisted (37%) and private (5%) schools. The data reveal a similar proportion of trained male (48%) and females (45%) teachers (Table 8). The survey results also show a growth in professional qualification by age group; the proportion of science teachers with the diploma in education increased progressively from 6% of teachers between 20-29 years of age to 63% of those 50 years and over (Table 9). Additionally, 38% of graduate teachers and 60% of those with a higher degree were professionally trained at the diploma in education level (Table 10).

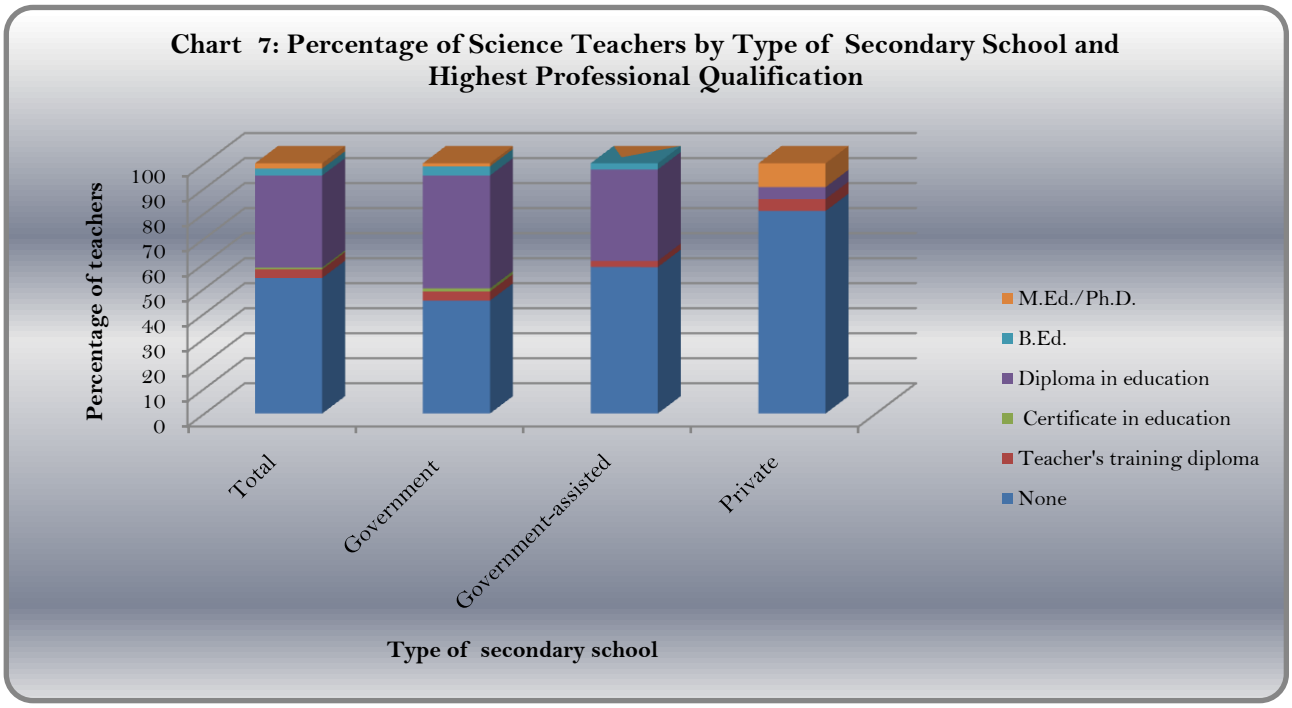
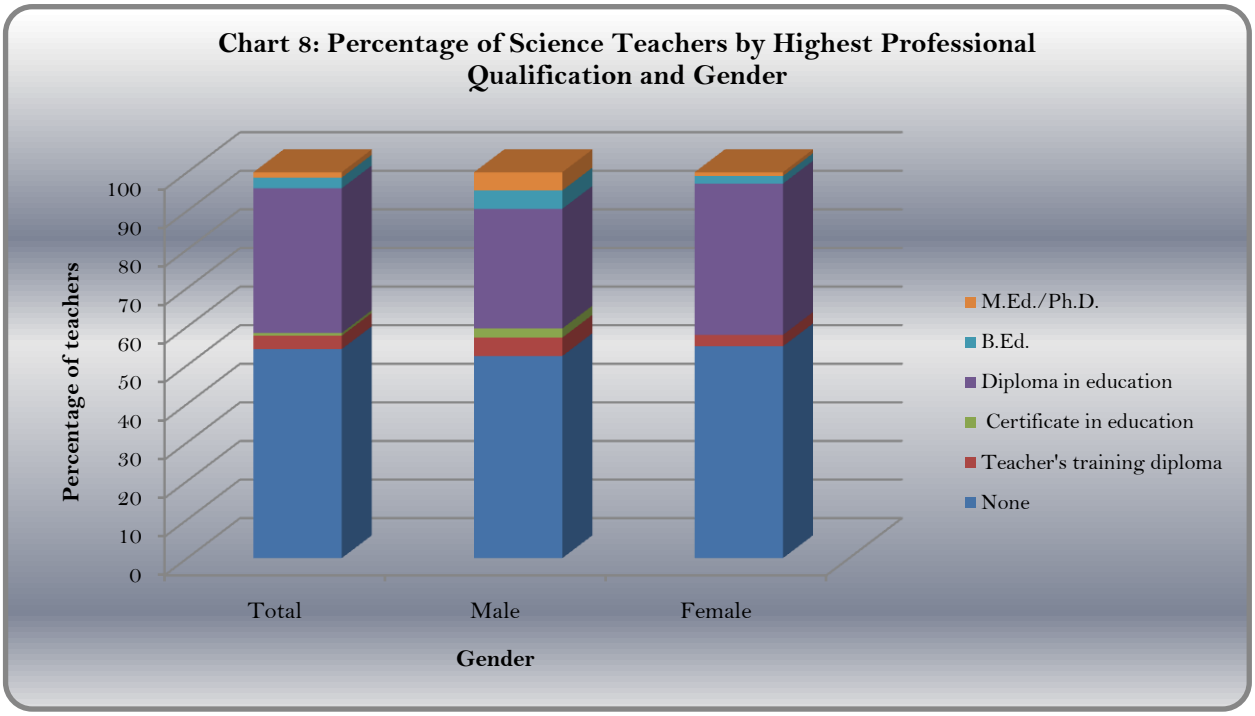


Table 8: Distribution of Science Teachers by Highest Professional Qualification and Gender

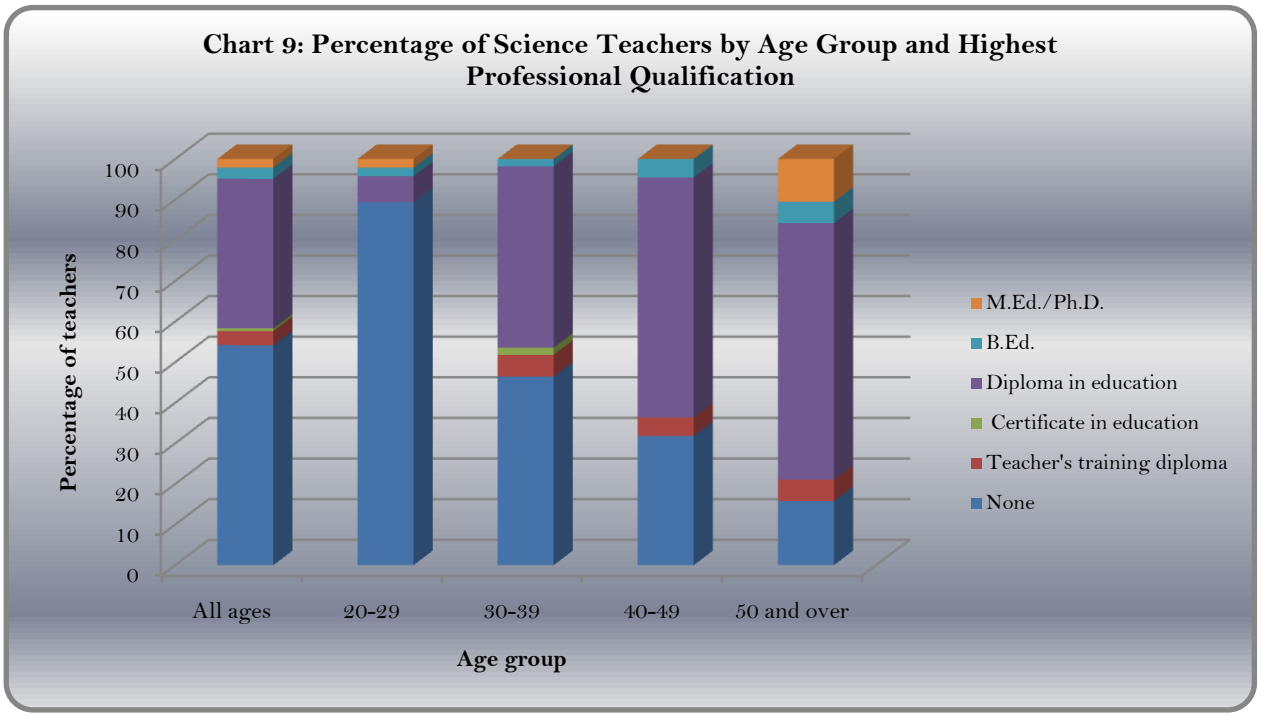
Highest professional qualification	Gender					
	Total		Male		Female	
	No.	Percentage	No.	Percentage	No.	Percentage
	(1)	(2)	(3)	(4)	(5)	(6)
Total	144	100	42	100	102	100
None	78	54	22	52	56	55
Teacher's training diploma	5	3	2	5	3	3
Certificate in education	1	1	1	2	0	0
Diploma in education	54	38	13	31	40	39
B.Ed.	4	3	2	5	2	2
M.Ed./Ph.D.	2	1	2	5	1	1



Source: Table 8

Table 9: Percentage of Science Teachers by Age Group and Highest Professional Qualification

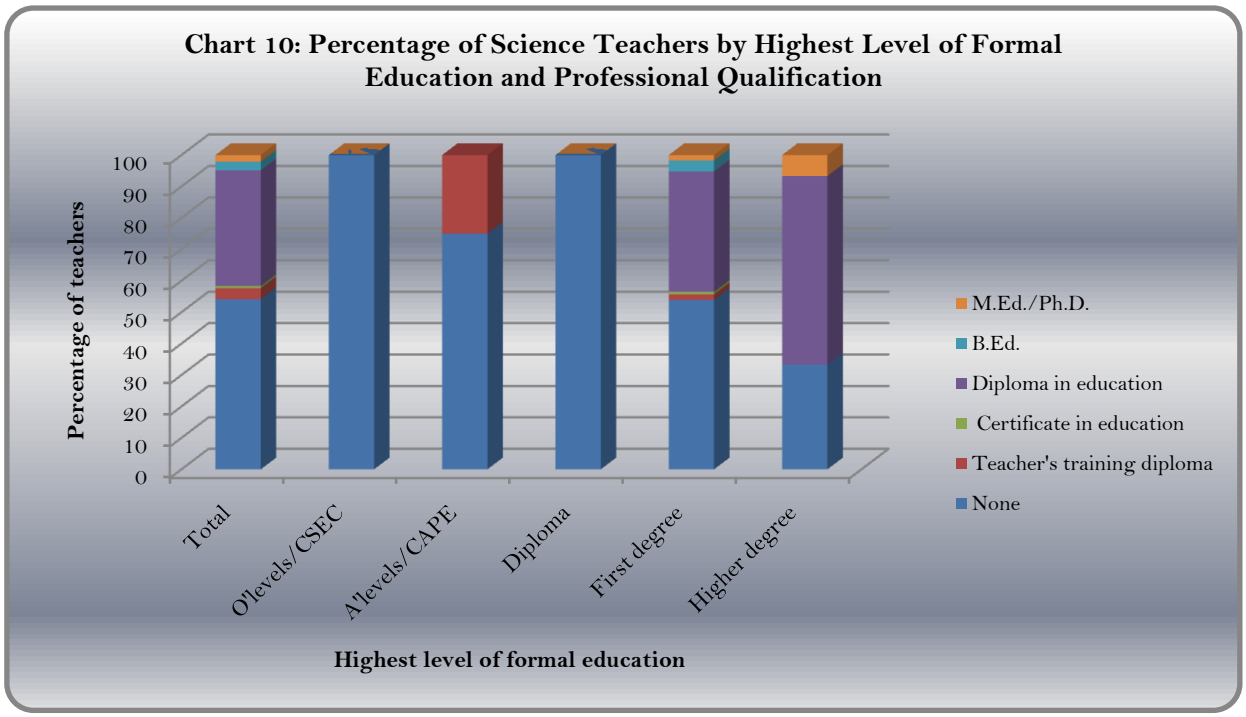
Age group (years)	Highest professional qualification						
	Total	None	Teacher's training diploma	Certificate in education	Diploma in education	B.Ed.	M.Ed./Ph.D.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
All ages	100	54	3	1	37	3	2
20-29	100	89	0	0	6	2	2
30-39	100	46	5	2	45	2	0
40-49	100	32	5	0	59	5	0
50 and over	100	16	5	0	63	5	11



Source: Table 9

Table 10: Percentage of Teachers by Highest Level of Formal Education and Highest Professional Qualification

Highest level of formal education	Highest professional qualification						
	Total	None	Teacher's training diploma	Certificate in education	Diploma in education	B.Ed.	M.Ed./Ph.D.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Total	100	54	3	1	37	3	2
O'levels/CSEC	100	100	0	0	0	0	0
A'levels/CAPE	100	75	25	0	0	0	0
Diploma	100	100	0	0	0	0	0
First degree	100	54	2	1	38	3	2
Higher degree	100	33	0	0	60	0	7

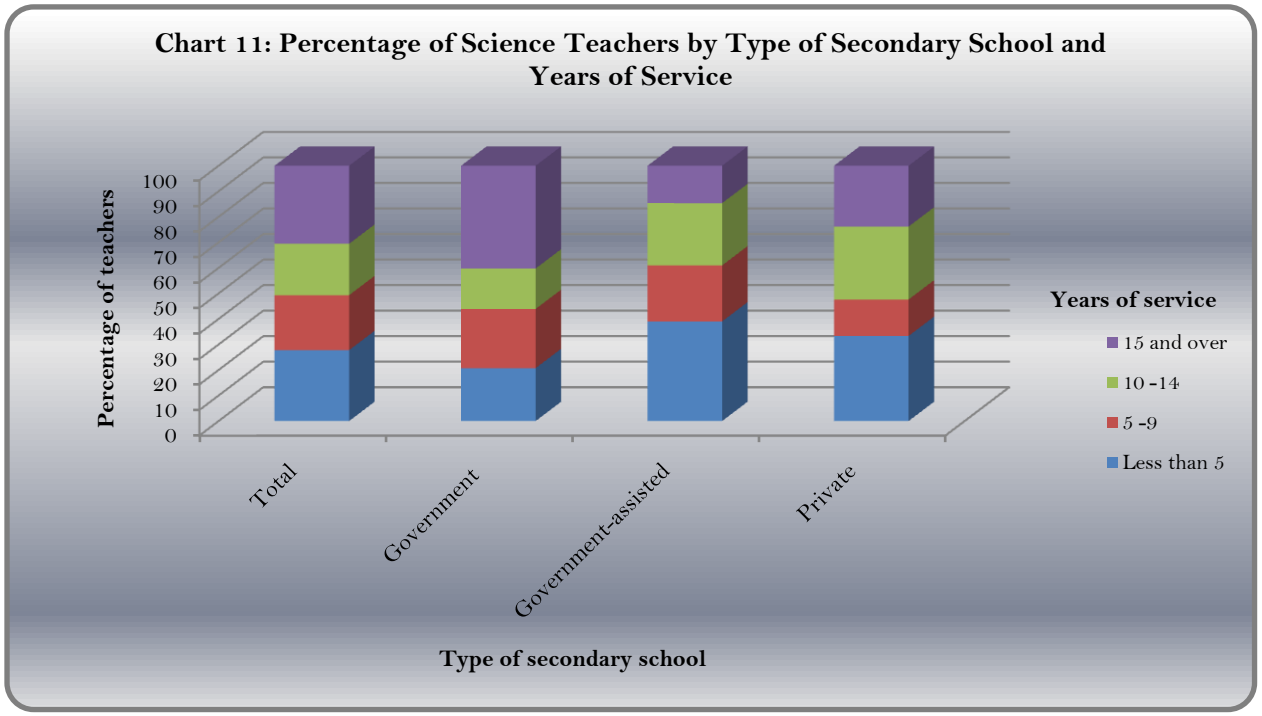


Source: Table 10

Table 11: Percentage of Science Teachers by Type of Secondary School and Years of Service

Type of secondary school	Years of service - percentage of science teachers				
	Total	Less than 5	5 -9	10 -14	15 and over
	(1)	(2)	(3)	(4)	(5)
Total	100	28	22	20	31
Government	100	21	23	16	40
Government Assisted	100	39	22	24	15
Private	100	33	14	29	24

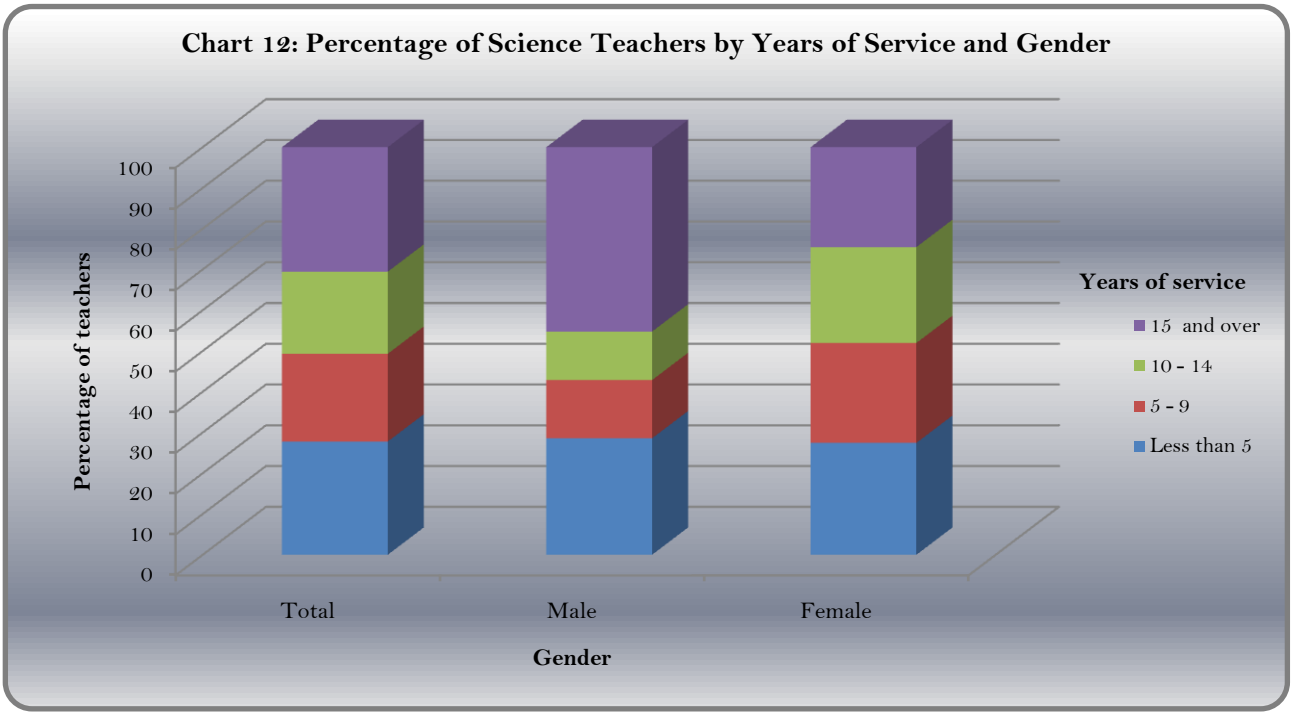
Approximately one-third (31%) of the sample of science teachers, mainly in government secondary schools, reported service of 15 years and over while 28%, especially in government-assisted and private schools, indicated teaching experience of less than five years (Table 11). In addition, a similar proportion of the sample recorded teaching service of 5-9 years (22%) and 10-14 years (20%). A review of the data by gender reveals that a substantial percentage (45%) of males reported service of 15 years and over while the distribution of females over years of service was similar (Table 12).



Source: Table 11

Table 12: Distribution of Science Teachers by Years of Service and Gender

Years of service	Gender					
	Total		Male		Female	
	No.	Percentage	No.	Percentage	No.	Percentage
	(1)	(2)	(3)	(4)	(5)	(6)
Total	144	100	42	100	102	100
Less than 5	40	28	12	29	28	27
5 - 9	31	22	6	14	25	25
10 - 14	29	20	5	12	24	24
15 and over	44	31	19	45	25	25

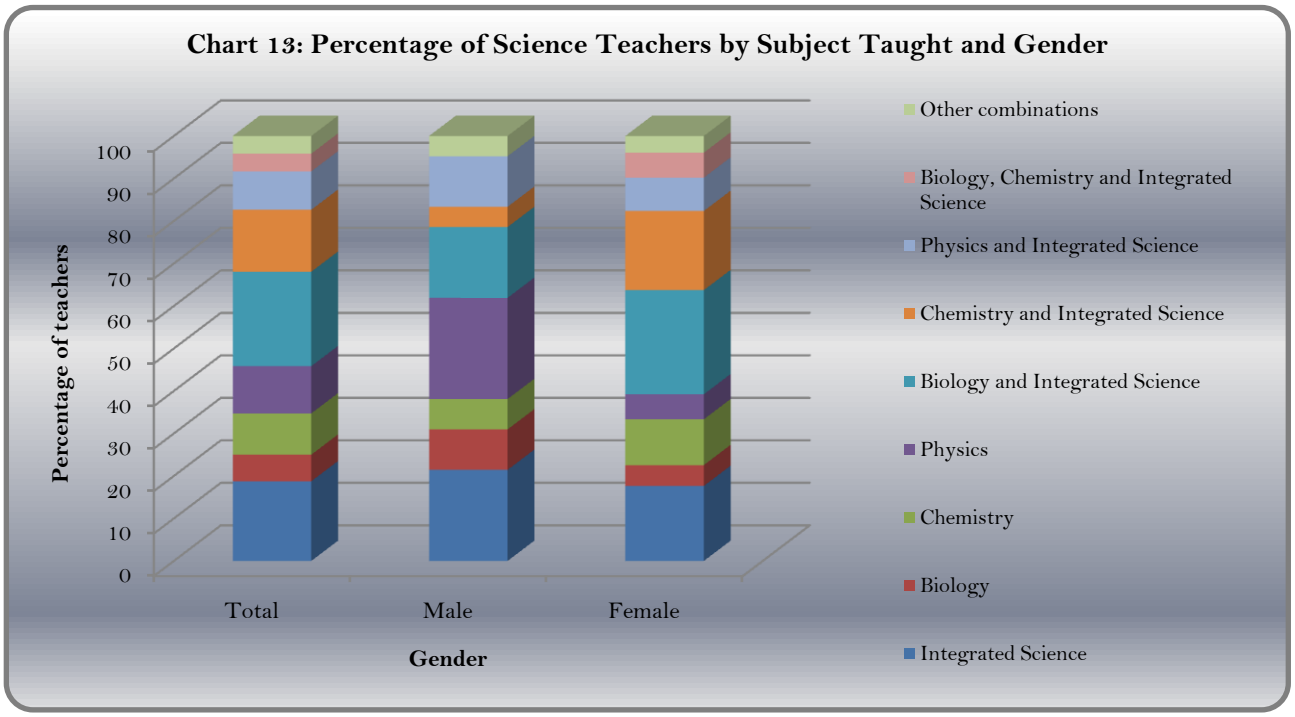


Source: Table 12

Table 13: Distribution of Science Teachers by Subject Taught and Gender

Subject taught	Gender					
	Total		Male		Female	
	No.	Percentage	No.	Percentage	No.	Percentage
	(1)	(2)	(3)	(4)	(5)	(6)
Total	144	100	42	100	102	100
Integrated Science	27	19	9	21	18	18
Biology	9	6	4	10	5	5
Chemistry	14	10	3	7	11	11
Physics	16	11	10	24	6	6
Biology and Integrated Science	32	22	7	17	25	25
Chemistry and Integrated Science	21	15	2	5	19	19
Physics and Integrated Science	13	9	5	12	8	8
Biology, Chemistry and Integrated Science	6	4	0	0	6	6
Other combinations	6	4	2	5	4	4

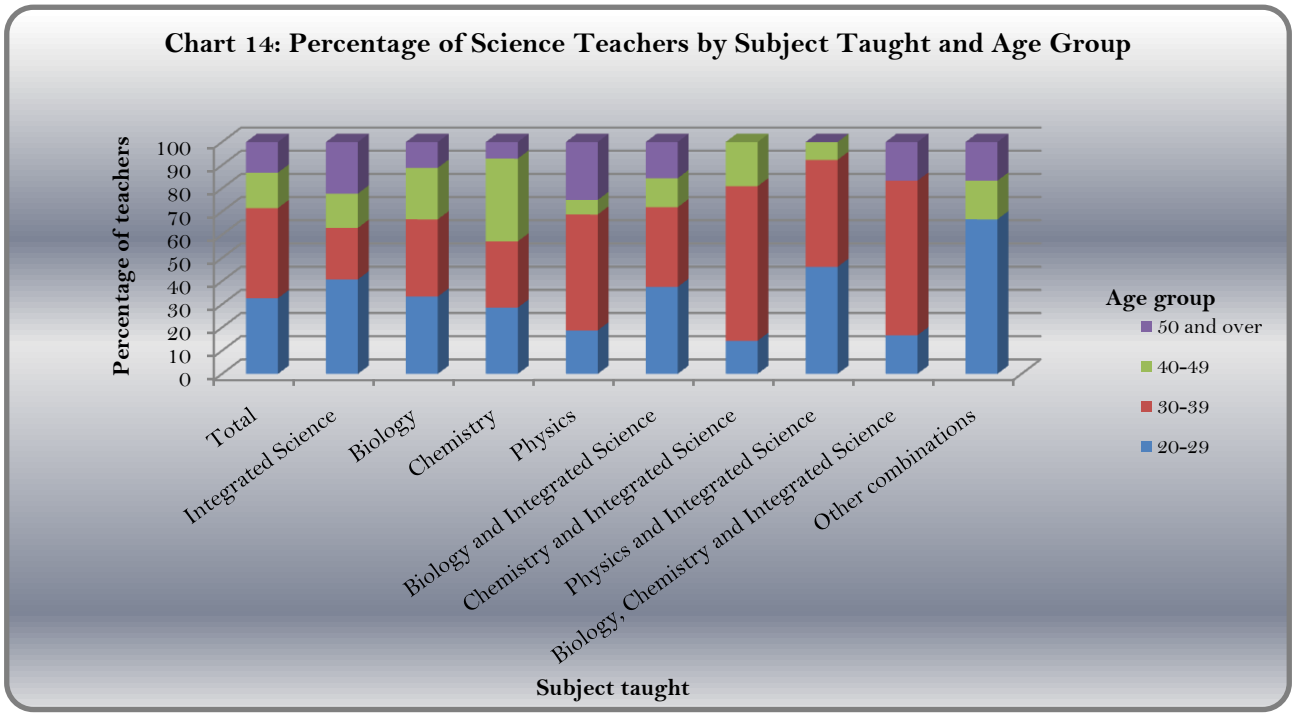
Table 13 shows the distribution of secondary school teachers surveyed by the branch of science taught. One fifth (22%) of the science teachers taught a combination of Biology and Integrated Science while a similar percentage (19%) taught Integrated Science only. Fifteen percent (15%) taught both Chemistry and Integrated Science while 11% and 10% taught Physics and Chemistry respectively. By gender, most males were engaged in teaching Physics (24%), Integrated Science (21%), and Biology and Integrated Science (17%) while females taught Biology (25%) and Chemistry (19%) with Integrated Science in each case, and Integrated Science (18%). A review of the data by age group reveals that a half (50%) of the Physics teachers was between 30 - 39 years of age and a quarter (25%) 50 years and over (Table 14). In addition, a third (36%) of Chemistry teachers was observed in the 40 - 49 age category while a similar percentage (33%) of Biology teachers reported their ages of between 20 -29 and 30 - 39 years.



Source: Table 13

Table 14: Percentage of Science Teachers by Subject Taught and Age Group

Subject taught	Age group (years)				
	Total	20-29	30-39	40-49	50 and over
	percentage of science teachers				
	(1)	(2)	(3)	(4)	(5)
Total	100	33	39	15	13
Integrated Science	100	41	22	15	22
Biology	100	33	33	22	11
Chemistry	100	29	29	36	7
Physics	100	19	50	6	25
Biology and Integrated Science	100	38	34	13	16
Chemistry and Integrated Science	100	14	67	19	0
Physics and Integrated Science	100	46	46	8	0
Biology, Chemistry and Integrated Science	100	17	67	0	17
Other combinations	100	67	0	17	17

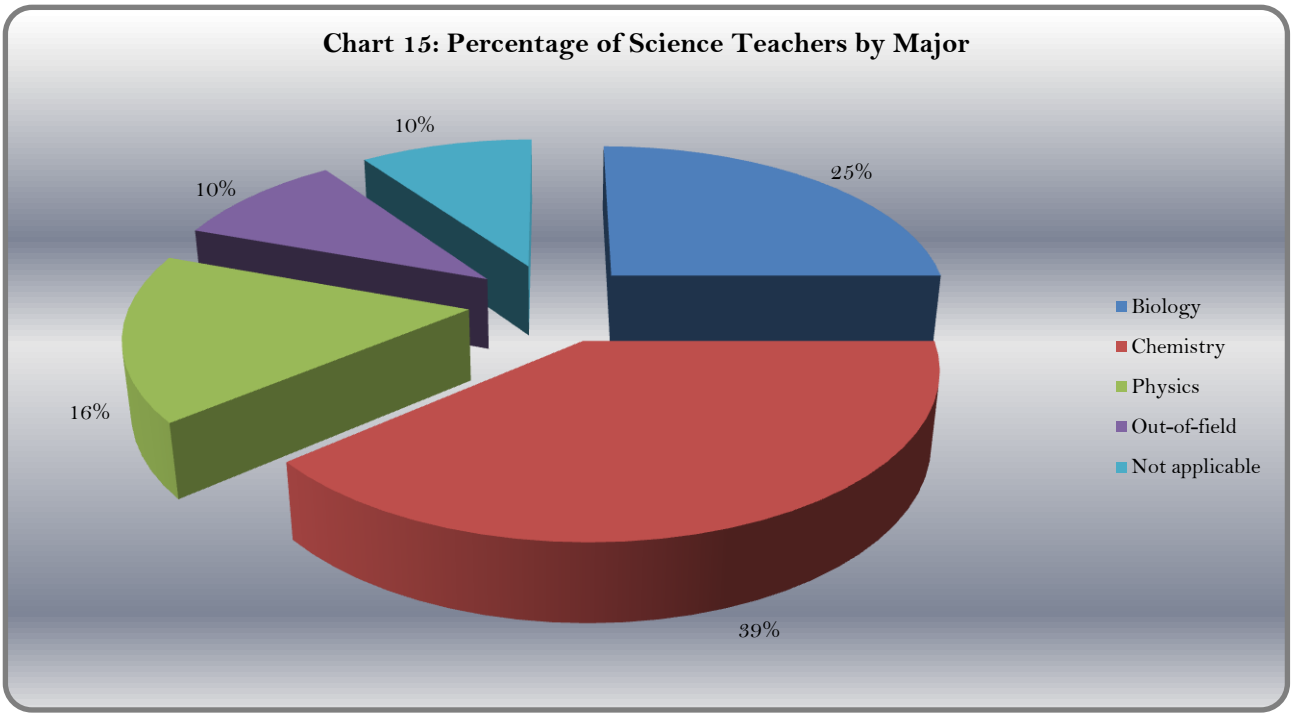


Source: Table 14

Table 15: Percentage of Science Teachers by Major within Subject Taught

Subject taught	Major					
	Total	Biology	Chemistry	Physics	Out-of-field	Not applicable
	(1)	(2)	(3)	(4)	(5)	(6)
Total	100	25	39	17	10	10
Integrated Science	100	19	37	4	15	26
Biology	100	67	11	0	0	22
Chemistry	100	0	86	0	7	7
Physics	100	0	6	81	6	6
Biology and Integrated Science	100	72	13	0	13	3
Chemistry and Integrated Science	100	5	81	0	14	0
Physics and Integrated Science	100	0	23	69	0	8
Biology, Chemistry and Integrated Science	100	0	83	0	17	0
Other combinations	100	17	50	17	0	17

Two-fifths (39%) of the sample of science teachers majored in Chemistry, a quarter (25%) in Biology and approximately one-fifth (17%) in Physics. The data show that the majority of teachers who taught Biology, Chemistry and Physics had a major in the respective fields.



Source: Table 15

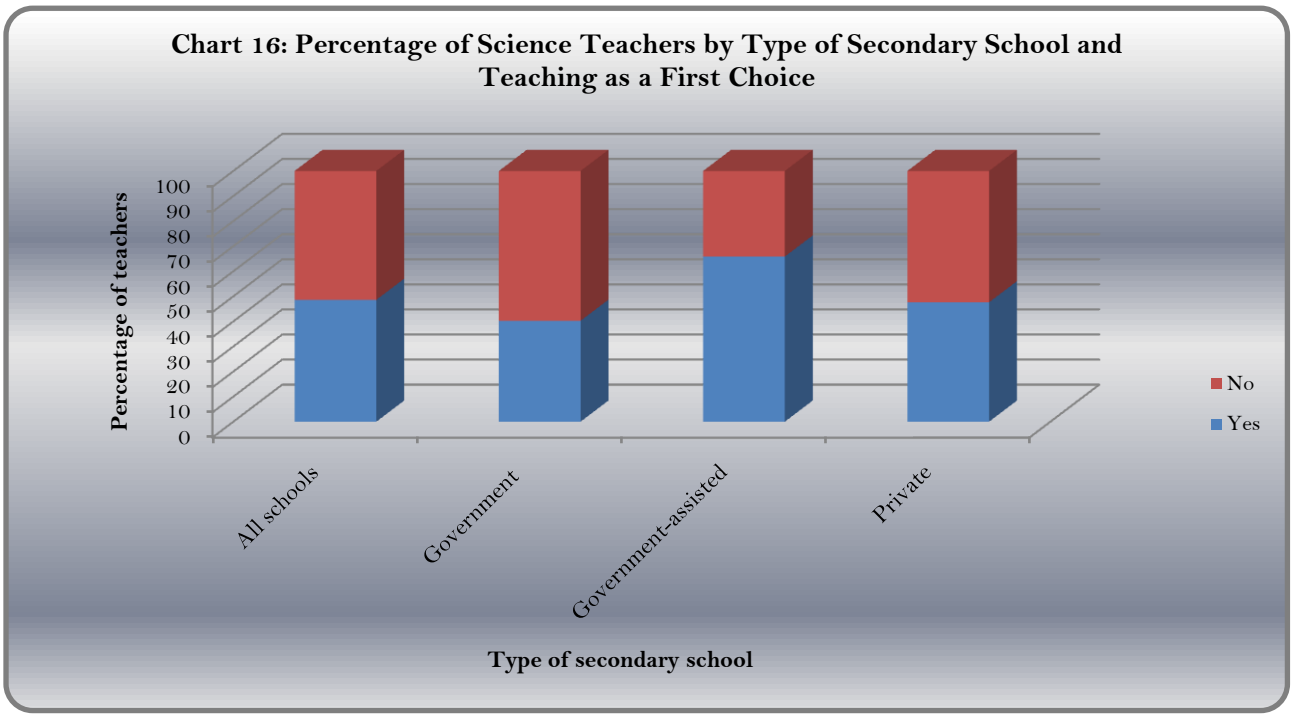
Table 16: Percentage of Science Teachers by Subject Taught within Major

Subject taught	Major					
	Total	Biology	Chemistry	Physics	Out-of-field	Not applicable
	(1)	(2)	(3)	(4)	(5)	(6)
Total	100	100	100	100	100	100
Integrated Science	19	14	18	4	29	50
Biology	6	17	2	0	0	14
Chemistry	10	0	21	0	7	7
Physics	11	0	2	54	7	7
Biology and Integrated Science	22	64	7	0	29	7
Chemistry and Integrated Science	15	3	30	0	21	0
Physics and Integrated Science	9	0	5	38	0	7
Biology, Chemistry and Integrated Science	4	0	9	0	7	0
Other combinations	4	3	5	4	0	7

Table 17: Distribution of Science Teachers by Type of Secondary School, Gender and Teaching as a First Choice Career

Type of secondary school	Gender	Teaching as a first choice career					
		Total		Yes		No	
		No.	Percentage	No.	Percentage	No.	Percentage
All schools		(1)	(2)	(3)	(4)	(5)	(6)
	Total	144	100	70	49	74	51
	Male	42	100	17	40	25	60
	Female	102	100	53	52	49	48
Government	Total	82	100	33	40	49	60
	Male	26	100	8	31	18	69
	Female	56	100	25	45	31	55
Government-assisted	Total	41	100	27	66	14	34
	Male	10	100	5	50	5	50
	Female	31	100	22	71	9	29
Private	Total	21	100	10	48	11	52
	Male	6	100	4	67	2	33
	Female	15	100	6	40	9	60

Forty-nine percent (49%) of the science teachers, especially in state-assisted schools (66%), selected teaching as their career of first choice while a similar percentage (51%) did not. By gender, a higher proportion (52%) of female teachers responded positively to teaching as a first choice career compared to males (40%).

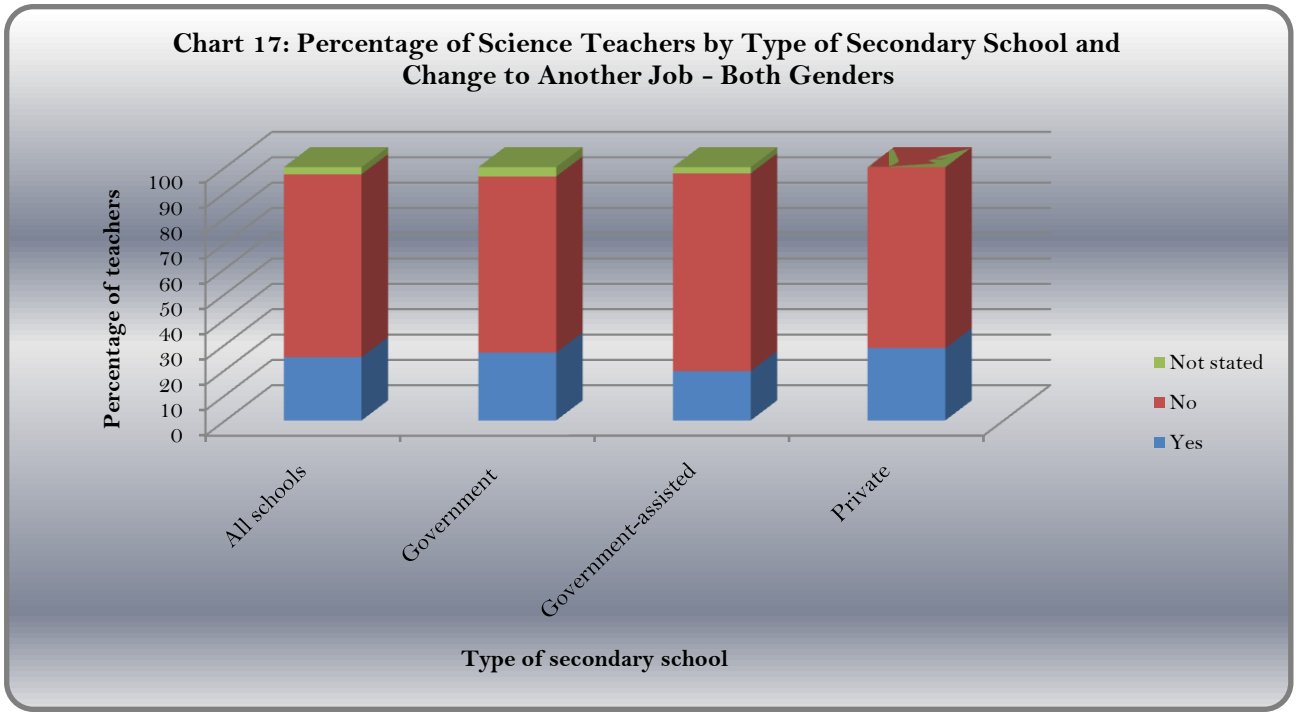


Source: Table 17

Table 18: Distribution of Science Teachers by Type of Secondary School, Gender and Opportunity to Change to Another Career

Type of secondary school	Gender	Change to another career							
		Total		Yes		No		Not stated	
		No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
All schools	Total	144	100	36	25	104	72	4	3
	Male	42	100	8	19	31	74	3	7
	Female	102	100	28	27	73	72	1	1
Government	Total	82	100	22	27	57	70	3	4
	Male	26	100	6	23	18	69	2	8
	Female	56	100	16	29	39	70	1	2
Government-assisted	Total	41	100	8	20	32	78	1	2
	Male	10	100	2	20	7	70	1	10
	Female	31	100	6	19	25	81	0	0
Private	Total	21	100	6	29	15	71	0	0
	Male	6	100	0	0	6	100	0	0
	Female	15	100	6	40	9	60	0	

The majority (72%) of science teachers overall, and similarly by type of school and gender indicated that they were not desirous of changing to another career (Table 18). The data also show that, of the teachers who selected teaching as their first choice of career, 81% indicated that they would not change to another career (Table 19). Of the teachers who did not choose teaching as their first choice, 64% expressed no desire to change jobs compared to 35% who would given the opportunity.



Source: Table 18

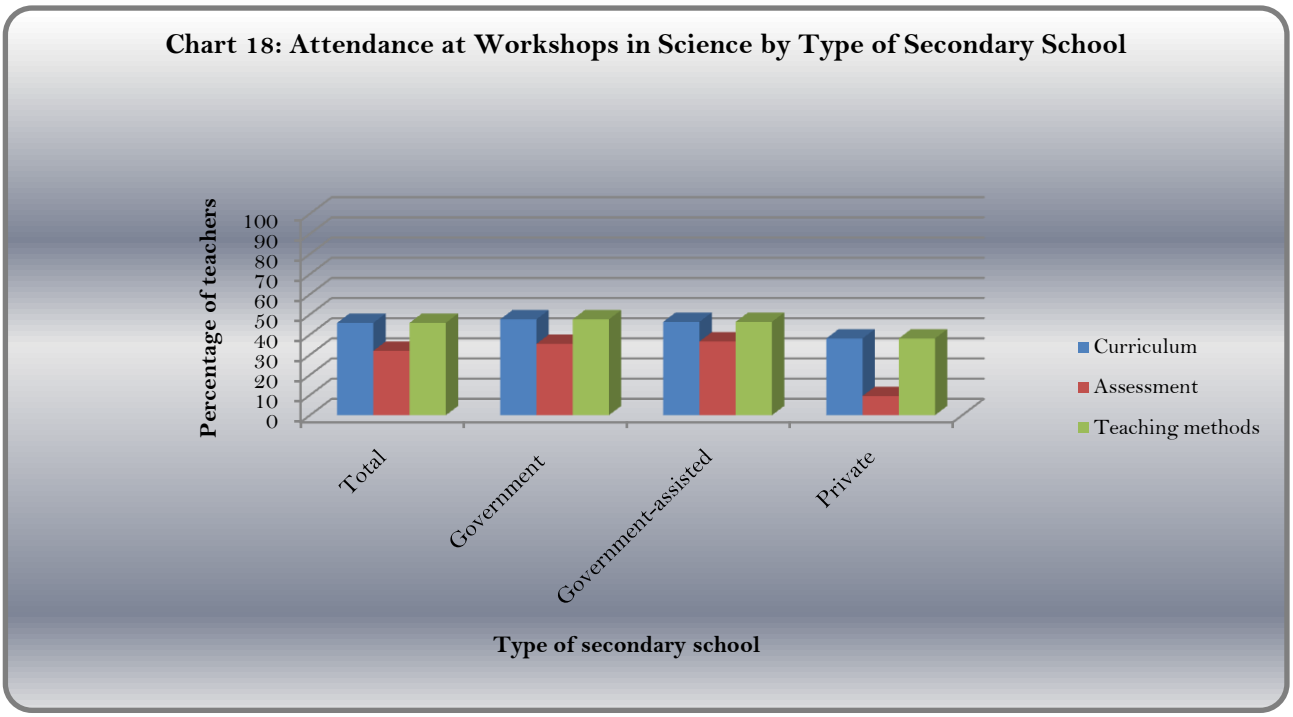
Table 19: Distribution of Science Teachers by Teaching as a First Choice Career and Change to Another Career

Teaching as a first choice career	Change to another career							
	Total		Yes		No		Not stated	
	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total	144	100	36	25	104	72	4	3
Yes	70	100	10	14	57	81	3	4
No	74	100	26	35	47	64	1	1

Table 20: Attendance at Workshops in Science by Type of Secondary School

Type of secondary school	Attended workshops - percentage of science teachers		
	Curriculum	Assessment	Teaching methods
	(1)	(2)	(3)
Total	46	32	46
Government	48	35	48
Government-assisted	46	37	46
Private	38	10	38

Forty-six percent (46%) of the sample of science teachers attended workshops in curriculum and teaching methods while one-third (32%) was exposed to workshops in assessment. A review of the data by type of school shows that a substantially larger percentage of teachers in public secondary schools attended science workshops in assessment compared to teachers in private secondary schools.

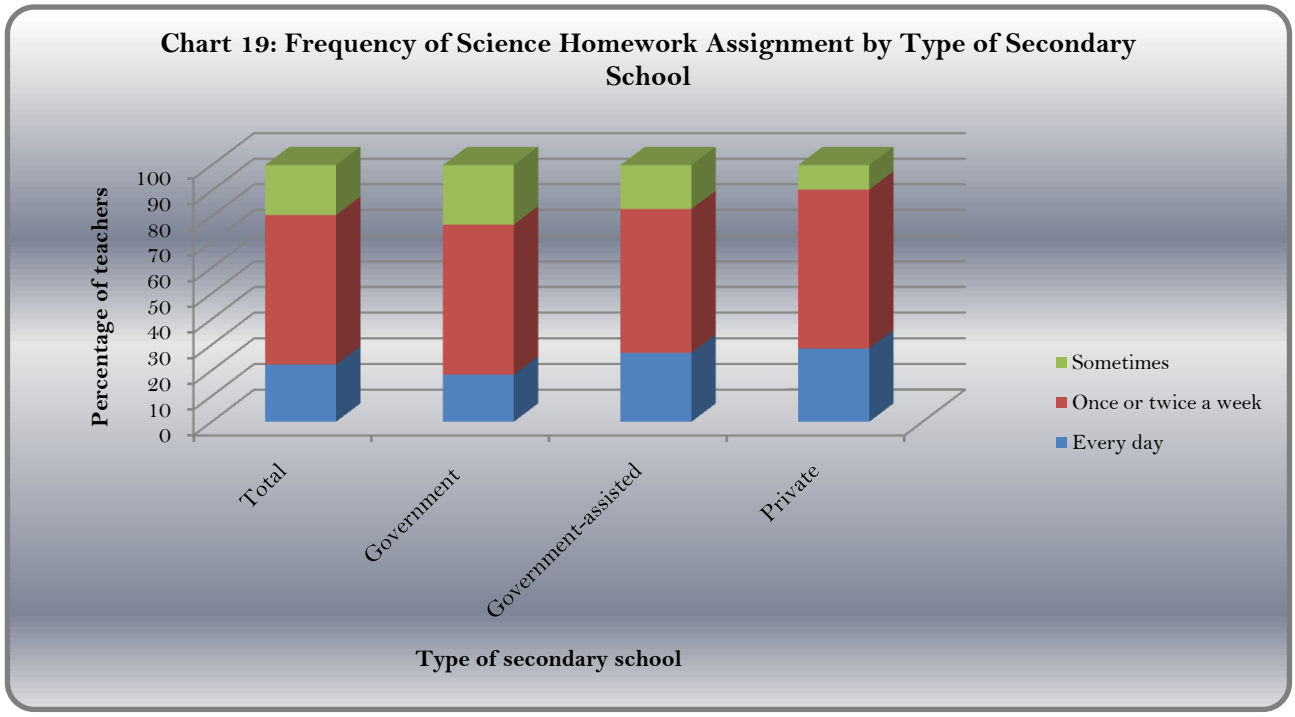


Source: Table 20

Table 21: Frequency of Science Homework Assignment by Type of Secondary School

Type of secondary school	Frequency of science homework assignment							
	Total		Every day		Once or twice a week		Sometimes	
	No.	Percentage	No.	Percentage	No.	Percentage	No.	Percentage
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Total	144	100	32	22	84	58	28	19
Government	82	100	15	18	48	59	19	23
Government-assisted	41	100	11	27	23	56	7	17
Private	21	100	6	29	13	62	2	10

Over a half (58%) of the teachers assigned science homework once or twice a week while one-fifth did so everyday (22%) and 19% sometimes. A relatively larger proportion of teachers in private (29%) and state-assisted (27%) schools assigned science homework everyday compared to 18% in state schools.

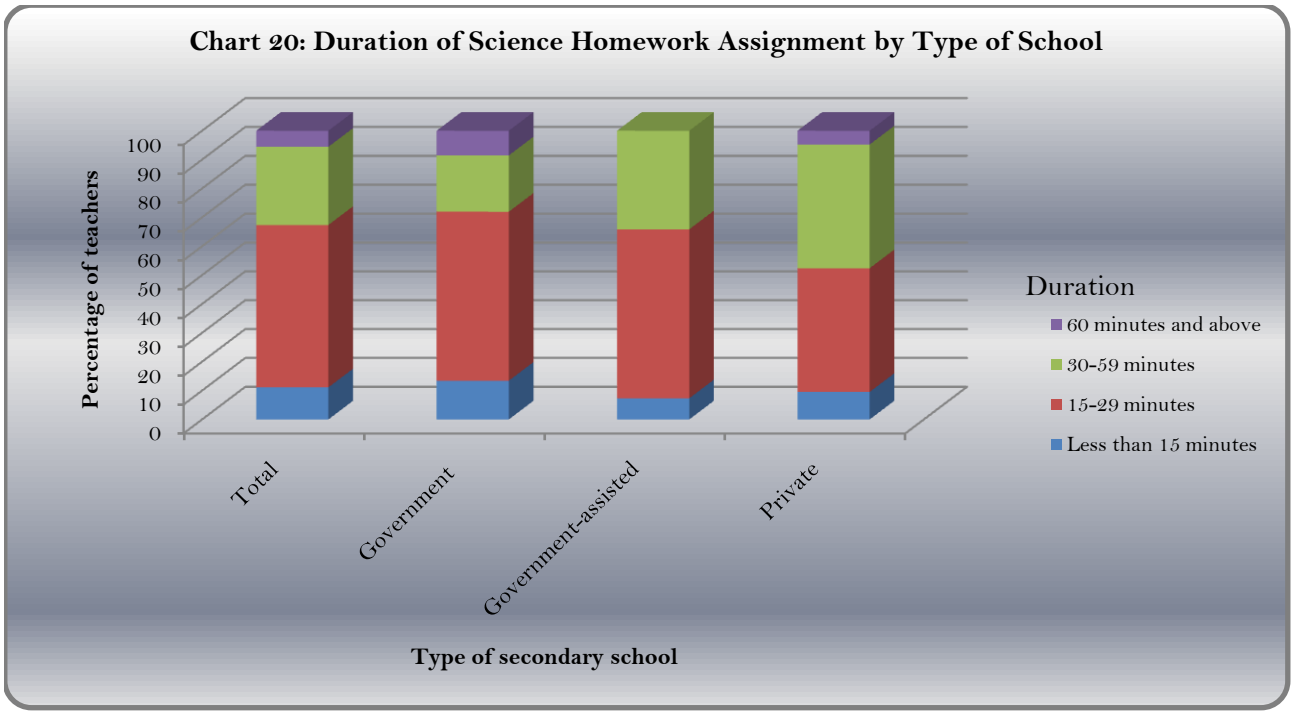


Source: Table 21

Table 22: Frequency of Homework Assignment by Duration and Type of Secondary School

Type of secondary school	Frequency of homework assignment	Duration of science homework - percentage of science teachers				
		Total	Less than 15 minutes	15-29 minutes	30-59 minutes	60 minutes and above
		(1)	(2)	(3)	(4)	(5)
Total	Total	100	11	56	27	6
	Every day	100	0	63	28	9
	Once or twice a week	100	14	50	32	4
	Sometimes	100	14	68	11	7
Government	Total	100	13	59	20	9
	Every day	100	0	60	27	13
	Once or twice a week	100	19	50	25	6
	Sometimes	100	11	79	0	11
Government-assisted	Total	100	7	59	34	0
	Every day	100	0	73	27	0
	Once or twice a week	100	9	57	35	0
	Sometimes	100	14	43	43	0
Private	Total	100	10	43	43	5
	Every day	100	0	50	33	17
	Once or twice a week	100	8	38	54	0
	Sometimes	100	50	50	0	0

Overall, the majority of teachers (56%) assigned science homework for a duration of 15-29 minutes and a quarter (27%) for a period of 30-59 minutes. Of the teachers who assigned homework daily, approximately two-thirds (63%) did so for a duration of 15-29 minutes and 28% for 30-59 minutes. A half (50%) of homework assignment of once or twice a week was for 15-29 minutes and a third (32%) for 30-59 minutes. By type of school, a relatively larger percentage (73%) of the teachers in state-assisted schools assigned homework everyday for a duration of 15-29 minutes compared to state (60%) and private (50%) schools.

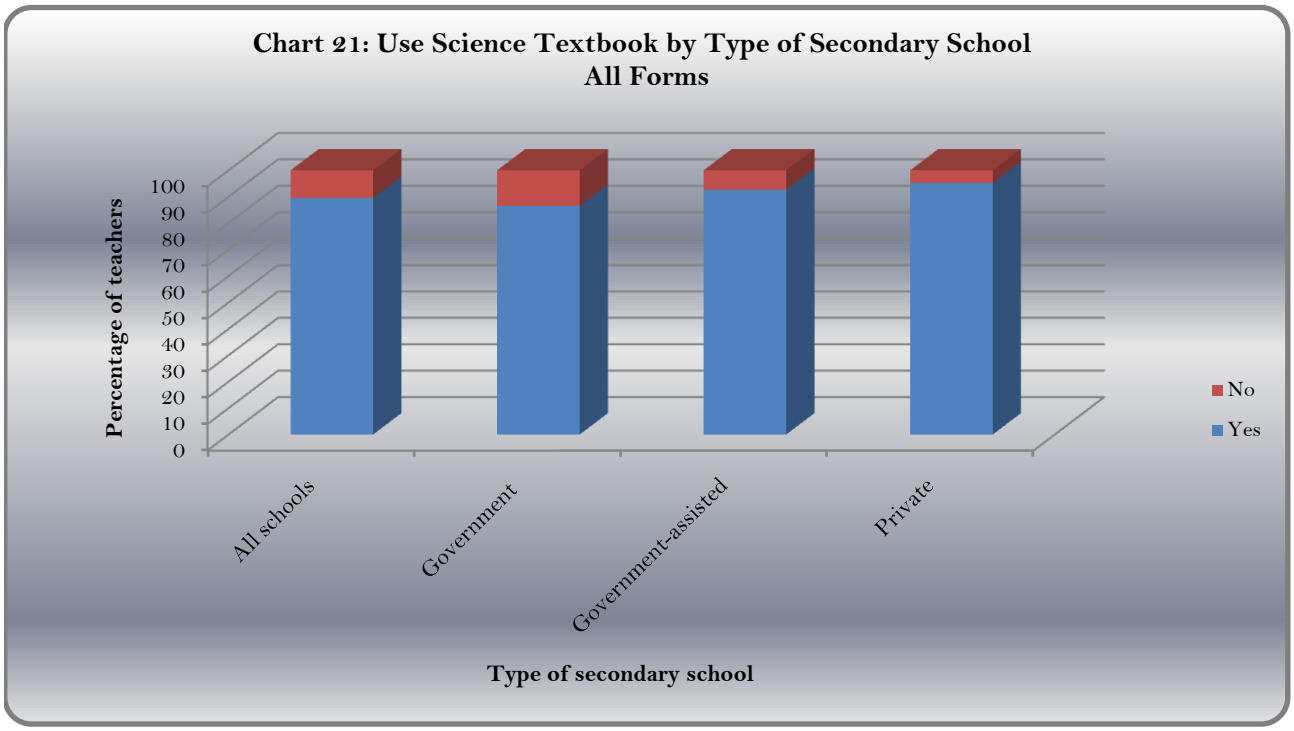


Source: Table 22

Table 23: Use Textbook to Teach Science by Type of Secondary School and Form

Type of secondary school	Form	Use science textbook					
		Total		Yes		No	
		No.	Percentage	No.	Percentage	No.	Percentage
		(1)	(2)	(3)	(4)	(5)	(6)
All schools	All forms	144	100	129	90	15	10
	Form 1	31	100	29	94	2	6
	Form 2	28	100	25	89	3	11
	Form 3	26	100	23	88	3	12
	Form 4	35	100	29	83	6	17
	Form 5	24	100	23	96	1	4
Government	All forms	82	100	71	87	11	13
	Form 1	16	100	15	94	1	6
	Form 2	19	100	16	84	3	16
	Form 3	16	100	14	88	2	13
	Form 4	20	100	15	75	5	25
	Form 5	11	100	11	100	0	0
Government-assisted	All forms	41	100	38	93	3	7
	Form 1	9	100	9	100	0	0
	Form 2	7	100	7	100	0	0
	Form 3	8	100	7	88	1	13
	Form 4	10	100	9	90	1	10
	Form 5	7	100	6	86	1	14
Private	All forms	21	100	20	95	1	5
	Form 1	6	100	5	83	1	17
	Form 2	2	100	2	100	0	0
	Form 3	2	100	2	100	0	0
	Form 4	5	100	5	100	0	0
	Form 5	6	100	6	100	0	0

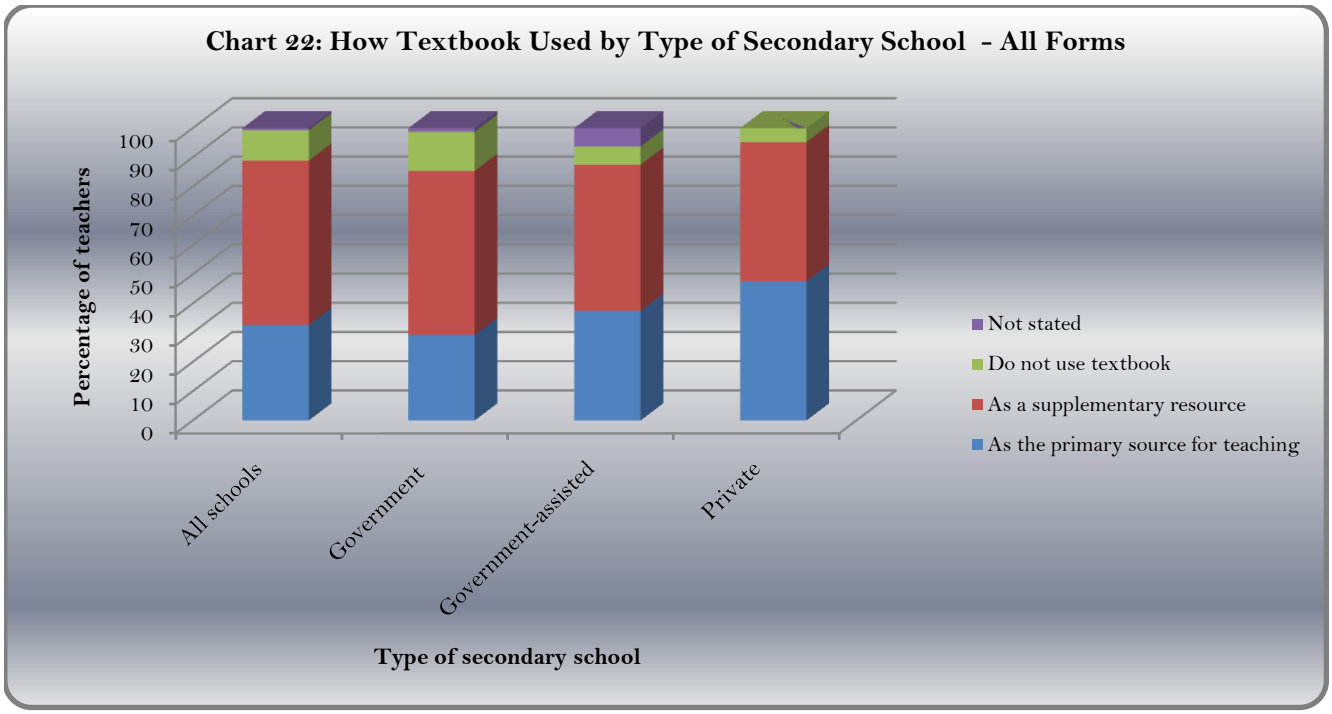
In general, a significant majority (90%) of the sample of science teachers, especially in forms 5 (96%) and 1 (94%), used textbooks to teach science (Table 23). A half (56%) of the teachers used textbooks as a supplementary resource for teaching compared to one-third (33%) who used them as a primary source (Table 24). A review of the data by forms reveals that over a half of the teachers in each form except form 3 used textbooks as a supplementary resource. Additionally, a larger proportion (17%) of form 4 teachers, especially in state schools (25%), did not use a textbook for teaching science compared to teachers in the other forms. A further examination of the data by type of school shows that approximately a third of the teachers in government (29%) and government-assisted (32%) schools used textbooks as the primary basis for teaching compared to a half (48%) in private schools.



Source: Table 23

Table 24: How Textbook Used by Type of Secondary School and Forms

Type of secondary school	Form	How textbook used - percentage of science teachers				
		Total	As the primary source for teaching	As a supplementary resource	Do not use textbook	Not stated
		(1)	(2)	(3)	(4)	(5)
All schools	All forms	100	33	56	10	1
	Form 1	100	35	55	6	3
	Form 2	100	29	61	11	0
	Form 3	100	42	46	12	0
	Form 4	100	20	63	17	0
	Form 5	100	42	54	4	0
Government	All forms	100	29	56	13	1
	Form 1	100	38	50	6	6
	Form 2	100	26	58	16	0
	Form 3	100	31	56	13	0
	Form 4	100	10	65	25	0
	Form 5	100	55	45	0	0
Government-assisted	All forms	100	32	61	7	0
	Form 1	100	22	78	0	0
	Form 2	100	43	57	0	0
	Form 3	100	63	25	13	0
	Form 4	100	30	60	10	0
	Form 5	100	0	86	14	0
Private	All forms	100	48	48	5	0
	Form 1	100	50	33	17	0
	Form 2	100	0	100	0	0
	Form 3	100	50	50	0	0
	Form 4	100	40	60	0	0
	Form 5	100	67	33	0	0

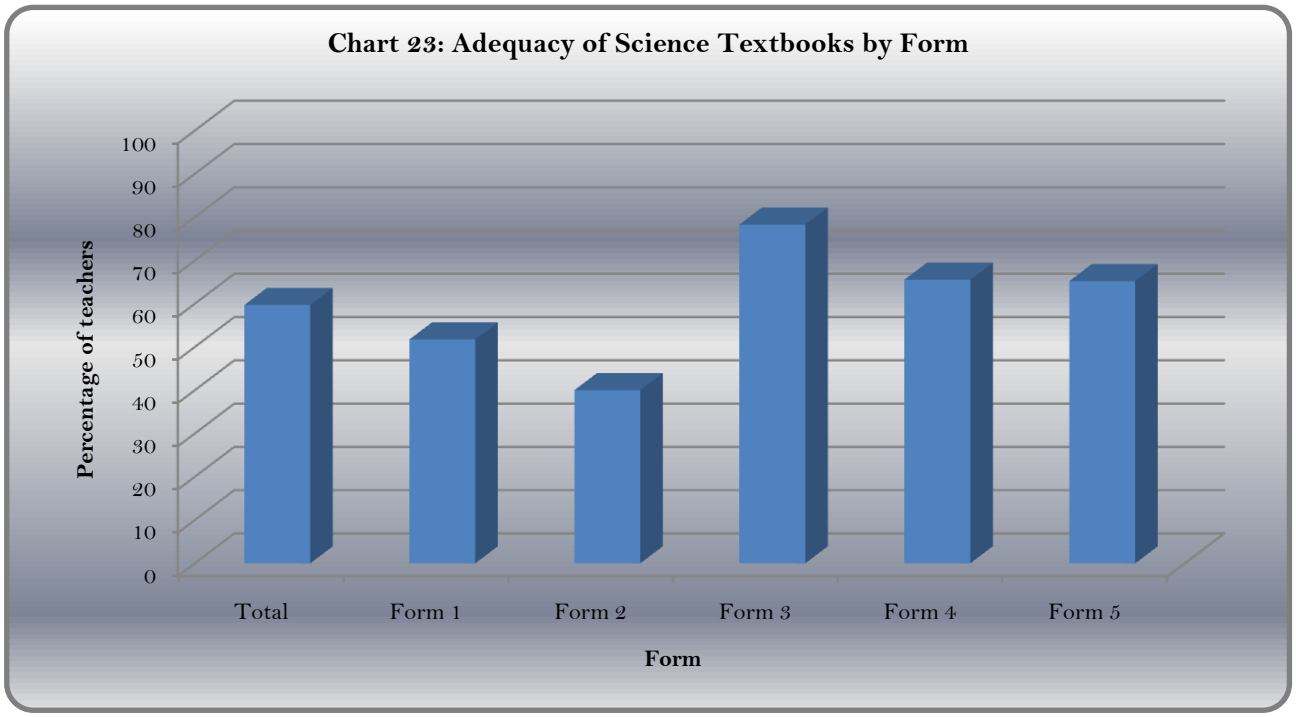


Source: Table 24

Table 25: Adequacy of Science Textbooks by Form

Name of Textbook	Adequacy of textbook - percentage of science teachers					
	Total	Form 1	Form 2	Form 3	Form 4	Form 5
	(1)	(2)	(3)	(4)	(5)	(6)
Total	60	52	40	78	66	65
New Lower Secondary Science Book1 - Hoong & Leng	39	39	0	0	0	0
New Lower Secondary Science Book2 - Hoong & Leng	35	0	30	5	0	0
Caribbean Interactive Science Book1 - Leng & Cazabon	100	100	0	0	0	0
Caribbean Interactive Science Book2 - Leng & Cazabon	50	0	50	0	0	0
Caribbean Interactive Science Book3 - Leng & Cazabon	77	0	0	77	0	0
Hodder Science A&B - Helsop, Brodie & Williams	100	100	0	0	0	0
Longman Integrated Sciences For CXC - S. Potter & R. Oliver	33	17	0	0	0	17
CXC Integrated Science - Mitchelmore & Phillips	75	13	13	0	13	38
Integrated Science for T&T Book 2 - Atwaroo-Ali & R. Maharaj	0	0	0	0	0	0
Biology: A Concise Revision Course for CXC - A. Tindale	64	0	0	18	45	0
CXC Biology - L. Atwaroo-Ali	100	0	0	33	33	33
Longman Biology for CXC - Bradfield & Potter	0	0	0	0	0	0
Longman Chemistry For CXC - S. Potter & R. Oliver	75	0	0	0	25	50
Chemistry Explained (A CXC Course) - Joanne Nazir	100	0	0	50	0	50
Chemistry: A Concise Revision Course for CxC - Anne Tindale	100	0	0	0	0	100
Chemistry for CSEC - T. Chung & M. Taylor	75	0	13	13	13	38
Heinemann Physics for CXC - N. Lambert & N. Lewis	80	0	0	10	70	0
Longman Physics for CXC - B. Jackson & P. Whiteley	60	0	0	0	20	40
GCSE Physics (4th Edition) - T. Duncan & H. Kennett	50	0	0	50	0	0
Physics for You - Keith Johnson	100	0	0	0	100	0

Table 25 and Chart 23 show the percentage of science teachers by form who agreed with the adequacy of the prescribed textbooks. Overall, 60% of the teachers in secondary schools stated that the science textbooks were adequate while 30% disagreed and 10% did not use them. A higher percentage of form 3 teachers (78%) indicated that the textbooks used were adequate for teaching science compared to forms 4 (66%), 5 (65%), 1 (52%) and 2 (40%) teachers. In the lower forms, a relatively larger proportion of the teachers indicated that the Caribbean Interactive Science series, Book 1 - Book 3 were adequate for teaching science compared to teachers who used the Lower Secondary Science series, Books 1 and 2. Of the more frequently used texts in forms 4 and 5, adequacy was recorded as follows: CXC Integrated Science (75%), Biology: A Concise Revision Course for CXC (64%), Chemistry for CSEC (75%) and Heinemann Physics for CXC (80%).

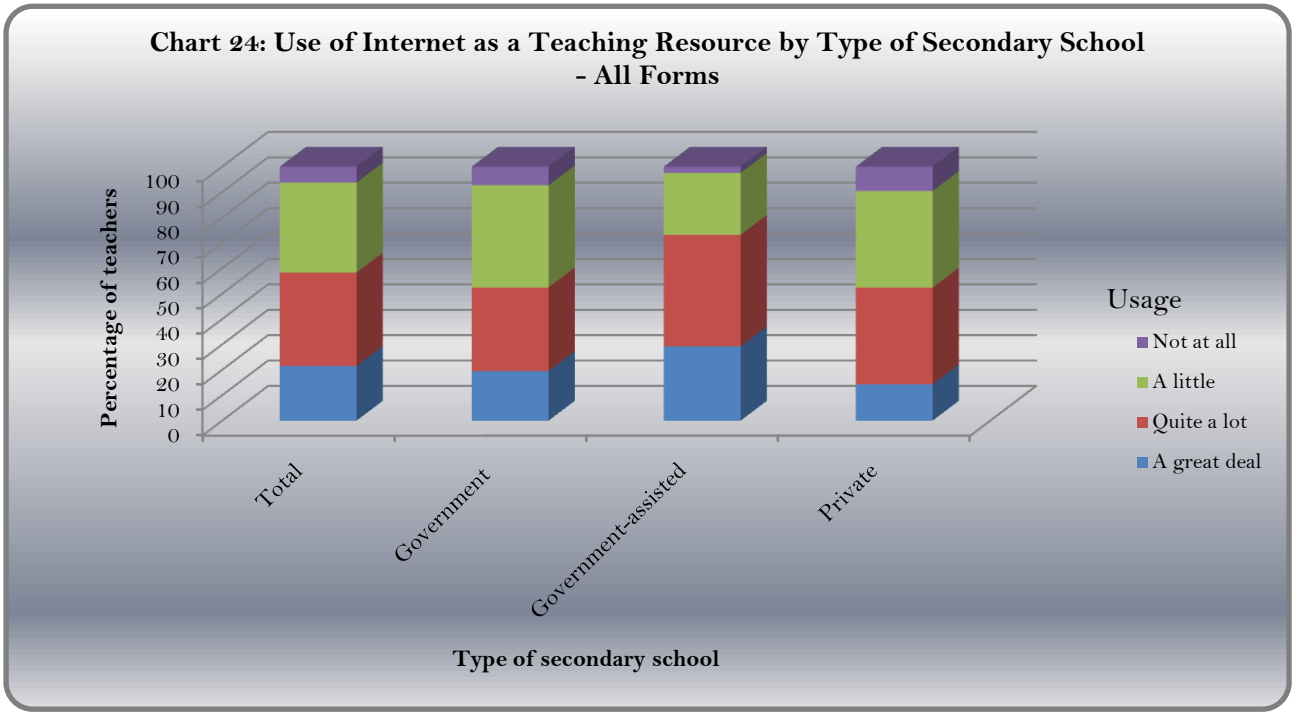


Source: Table 25

Table 26: Use Internet as a Teaching Resource by Type of Secondary School and Form

Type of secondary school	Form	Use Internet as a teaching resource - percentage of science teachers				
		Total	A great deal	Quite a lot	A little	Not at all
		(1)	(2)	(3)	(4)	(5)
All schools	All forms	100	22	37	35	6
	Form 1	100	29	32	29	10
	Form 2	100	25	36	39	0
	Form 3	100	15	38	38	8
	Form 4	100	26	29	37	9
	Form 5	100	8	54	33	4
Government	All forms	100	20	33	40	7
	Form 1	100	25	31	25	19
	Form 2	100	21	32	47	0
	Form 3	100	13	38	38	13
	Form 4	100	30	20	45	5
	Form 5	100	0	55	45	0
Government-assisted	All forms	100	29	44	24	2
	Form 1	100	44	44	11	0
	Form 2	100	43	29	29	0
	Form 3	100	13	38	50	0
	Form 4	100	30	50	10	10
	Form 5	100	14	57	29	0
Private	All forms	100	14	38	38	10
	Form 1	100	17	17	67	0
	Form 2	100	0	100	0	0
	Form 3	100	50	50	0	0
	Form 4	100	0	20	60	20
	Form 5	100	17	50	17	17

Twenty-two percent (22%) and 37% of the science teachers who participated in the survey indicated that they used the Internet, 'a great deal,' and, 'quite a lot,' respectively as a teaching resource while one-third (35%) used it a little and 6% did not use it. A review of the data by forms shows that cumulatively, the majority of science teachers in each form used the Internet, 'a great deal,' and, 'quite a lot,' as a teaching resource. By type of school, the survey results reveal that teachers in government-assisted secondary schools used the Internet as a teaching resource more than their counterparts in government and private schools.

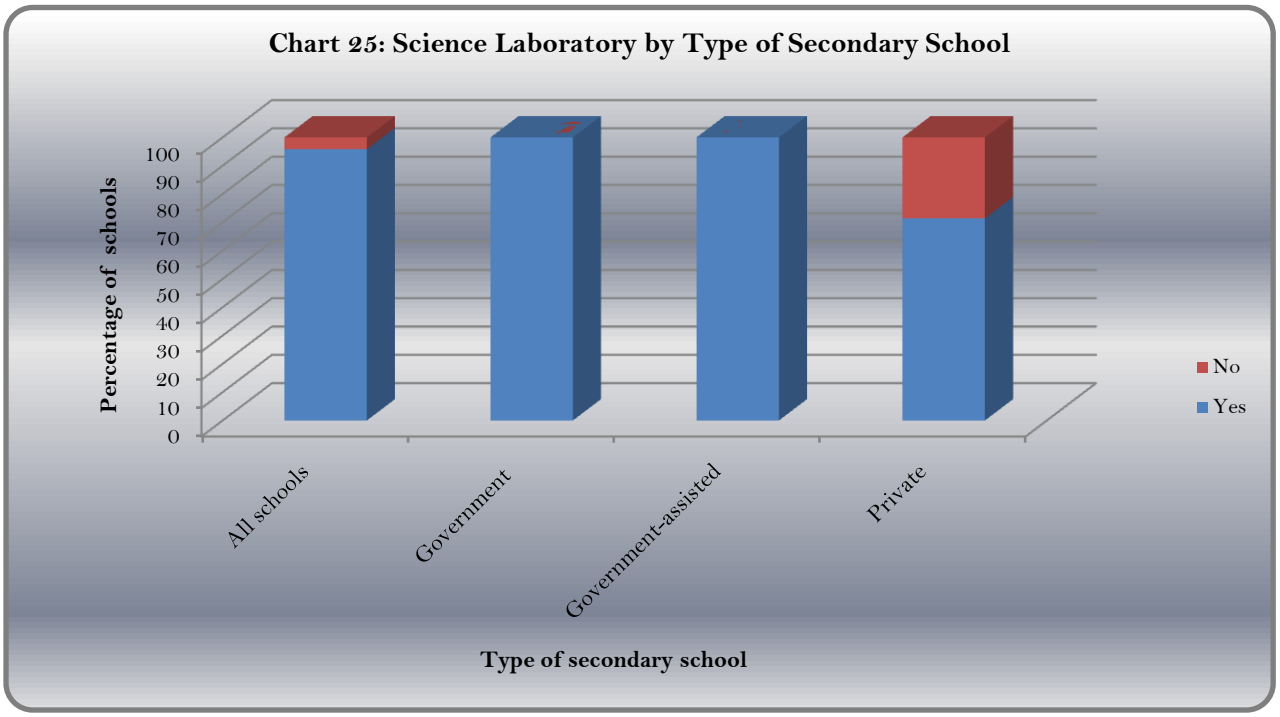


Source: Table 26

Table 27: Science Laboratory by Type of Secondary School

Type of secondary school	Have a science laboratory - percentage		
	Total	Yes	No
	(1)	(2)	(3)
All schools	100	96	4
Government	100	100	0
Government-assisted	100	100	0
Private	100	71	29

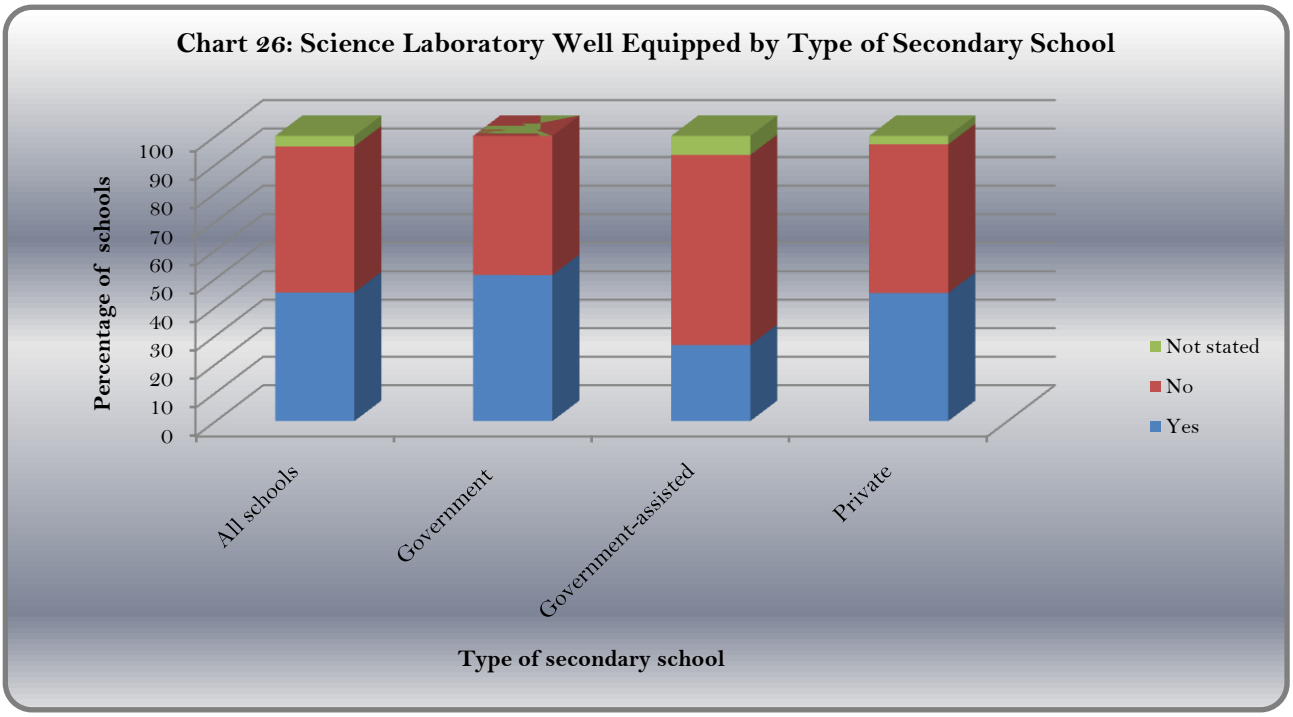
All public (100%) and 71% of private schools had science laboratories (Table 27). However, a half (51%), especially in the state-assisted schools (67%), indicated that the laboratories were not well equipped (Table 28).



Source: Table 27

Table 28: Science Laboratory Well Equipped by Type of Secondary School

Type of secondary school	Science laboratory well equipped- percentage			
	Total	Yes	No	Not stated
	(1)	(2)	(3)	(4)
All schools	100	45	51	4
Government	100	51	49	0
Government-assisted	100	27	67	7
Private	100	45	52	3

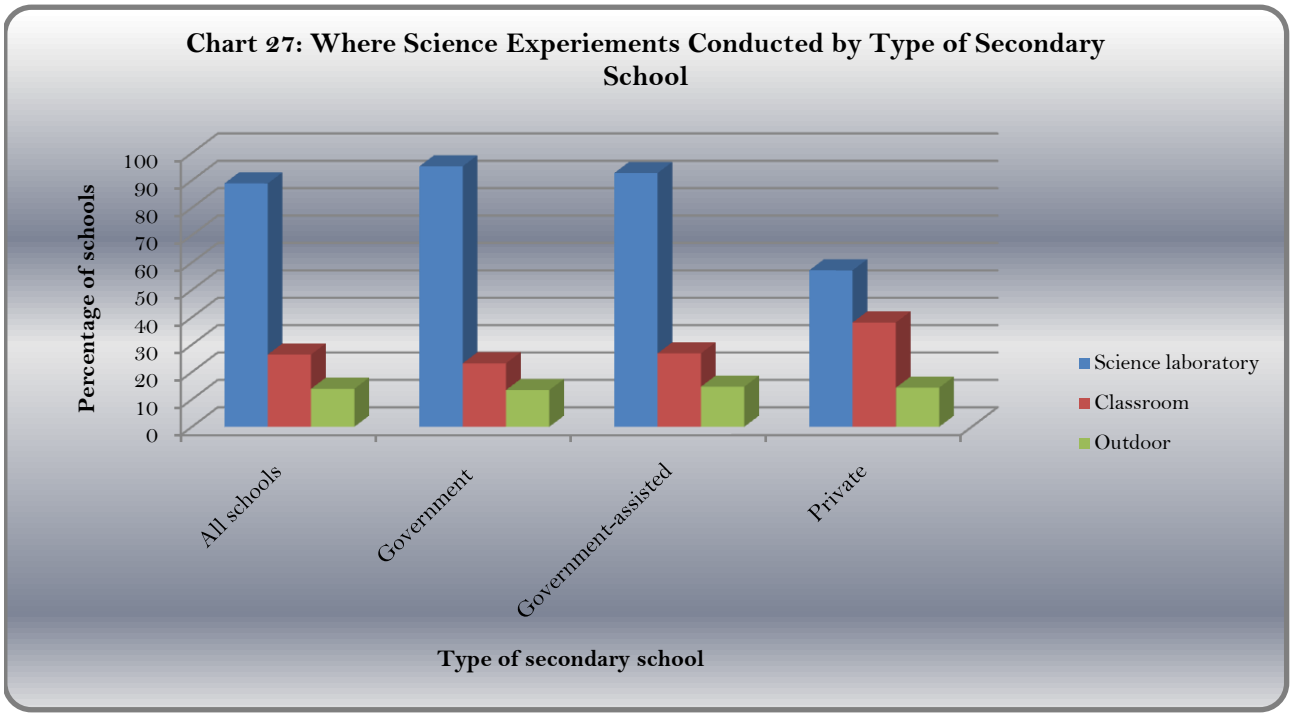


Source: Table 28

Table 29: Where Science Experiments Conducted by Type of Secondary School

Type of secondary school	Where science experiments conducted - percentage		
	Science laboratory	Classroom	Outdoor
	(1)	(2)	(3)
All schools	89	26	14
Government	95	23	13
Government-assisted	93	27	15
Private	57	38	14

Table 29 shows that science experiments were conducted mainly in science laboratories (89%). Additionally, teachers stated that experiments were conducted in the classroom (26%) and outdoors (14%). By type of secondary school, a similar distribution of responses was observed in state and state-assisted schools while a relatively lower percentage (57%) of experiments was conducted in the laboratories of private secondary schools and a relatively high percentage (38%) in classrooms.

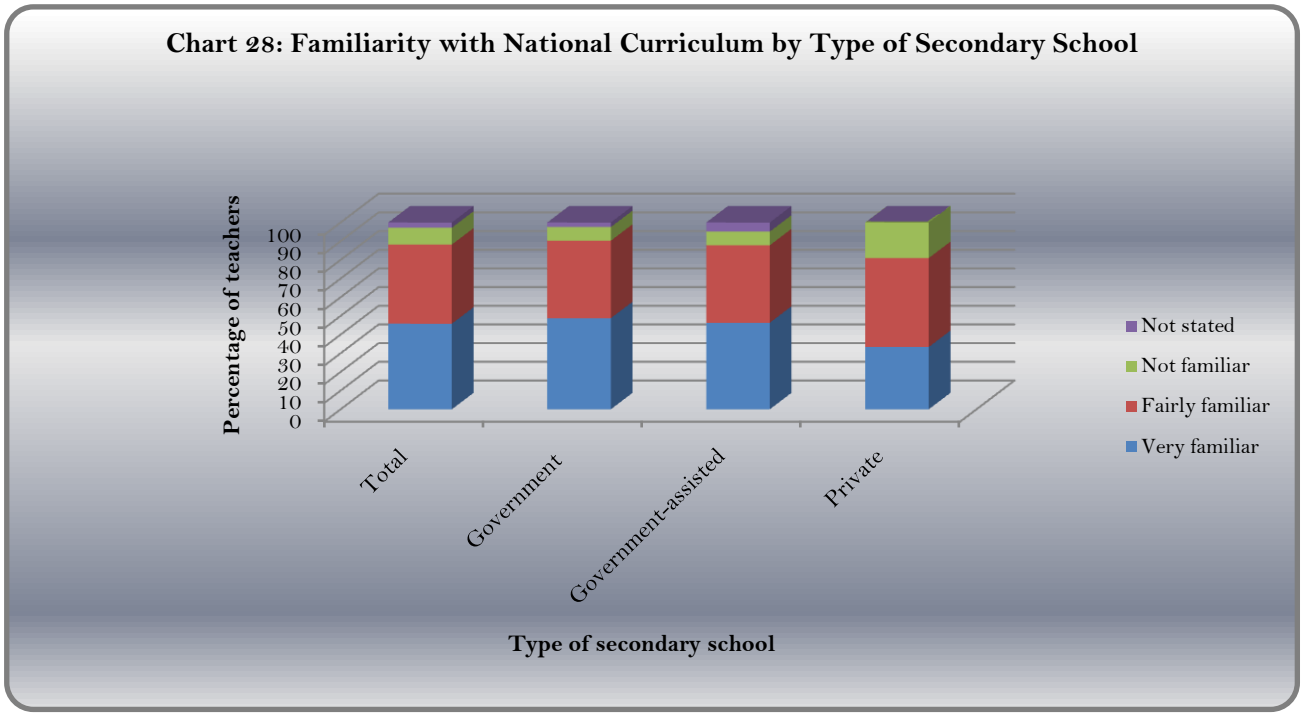


Source: Table 29

Table 30: Familiarity with National Curriculum by Type of Secondary School

Type of secondary school	Percentage of science teachers				
	Total	Very familiar	Fairly familiar	Not familiar	Not stated
	(1)	(2)	(3)	(4)	(5)
Total	100	46	42	9	3
Government	100	49	41	7	2
Government-assisted	100	46	41	7	5
Private	100	33	48	19	0

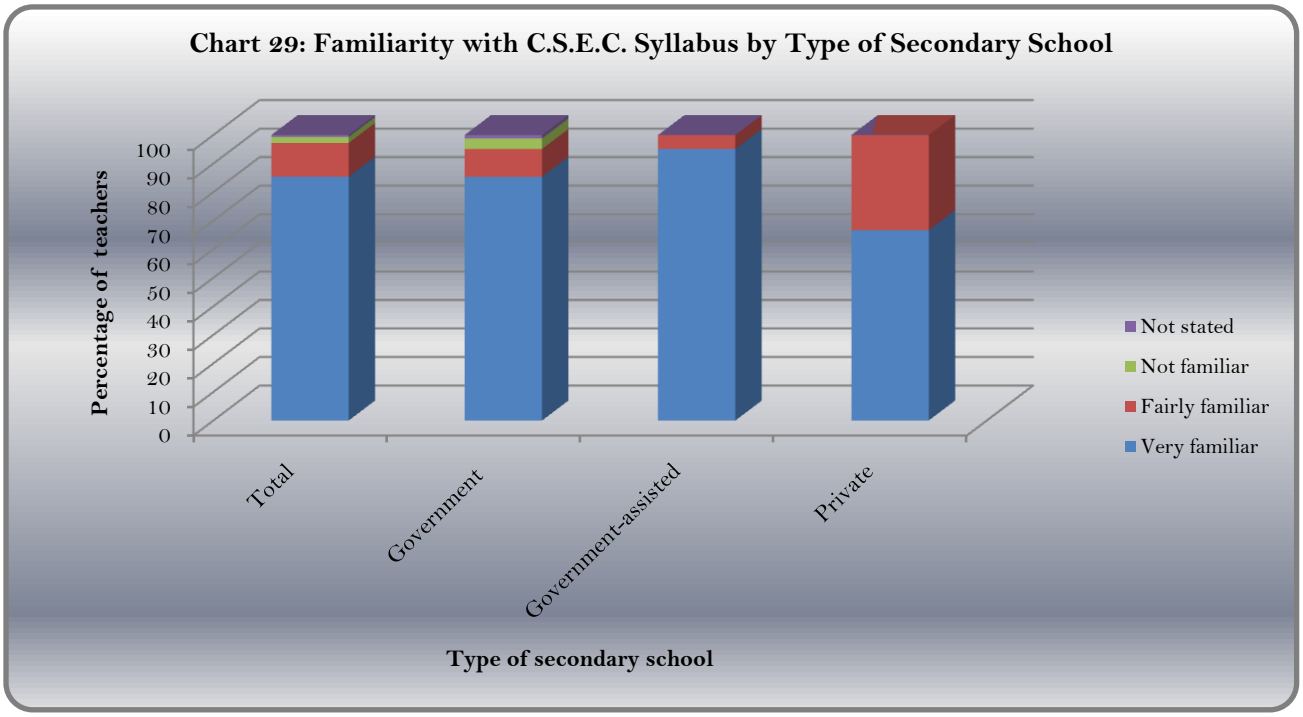
Less than fifty percent (46%) of teachers who participated in the survey indicated that they were, 'very familiar,' with the national curriculum while 42% were, 'fairly familiar' (Table 30). However, overall, a significant percentage (85%) of science teachers, especially in state (85%) and state-assisted (95%) schools, were very familiar with the Caribbean Secondary Education Certificate (C.S.E.C.) syllabus (Table 31).



Source: Table 30

Table 31: Familiarity with C.S.E.C. Syllabus by Type of Secondary School

Type of secondary school	Percentage of science teachers				
	Total	Very familiar	Fairly familiar	Not familiar	Not stated
	(1)	(2)	(3)	(4)	(5)
Total	100	85	12	2	1
Government	100	85	10	4	1
Government-assisted	100	95	5	0	0
Private	100	67	33	0	0

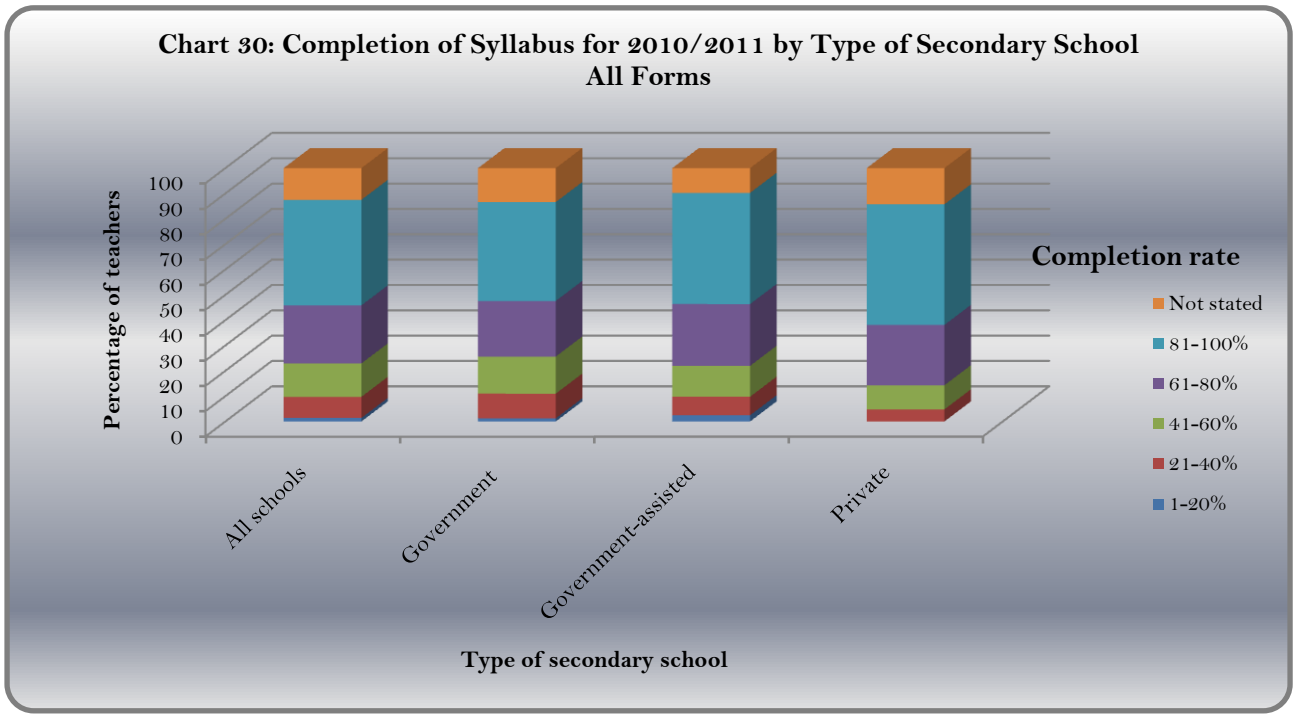


Source: Table 31

Table 32: Completion of Syllabus for Academic Year 2010/2011 by Type of Secondary School and Form

Type of secondary school	Form	Percentage completion of syllabus for 2010/2011						
		Total	1-20%	21-40%	41-60%	61-80%	81-100%	Not stated
		percentage of science teachers						
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
All schools	All forms	100	1	8	13	23	42	13
	Form 1	100	0	13	13	16	35	23
	Form 2	100	4	7	4	25	39	21
	Form 3	100	4	4	4	27	58	4
	Form 4	100	0	11	31	34	17	6
	Form 5	100	0	4	8	8	71	8
Government	All forms	100	1	10	15	22	39	13
	Form 1	100	0	13	25	0	44	19
	Form 2	100	5	5	5	32	32	21
	Form 3	100	0	0	6	25	63	6
	Form 4	100	0	20	30	35	5	10
	Form 5	100	0	9	0	9	73	9
Government-assisted	All forms	100	2	7	12	24	44	10
	Form 1	100	0	22	0	33	11	33
	Form 2	100	0	0	0	14	71	14
	Form 3	100	13	13	0	25	50	0
	Form 4	100	0	0	40	30	30	0
	Form 5	100	0	0	14	14	71	0
Private	All forms	100	0	5	10	24	48	14
	Form 1	100	0	0	0	33	50	17
	Form 2	100	0	50	0	0	0	50
	Form 3	100	0	0	0	50	50	0
	Form 4	100	0	0	20	40	40	0
	Form 5	100	0	0	17	0	67	17

Two-fifths (42%) of the science teachers in secondary schools indicated that they expected to complete between 81-100% of the syllabus for the academic year 2010/2011 and approximately a quarter (23%) between 61-80%. Form 5 teachers overall (71%), and by type of school, comprised the largest proportion who expected to complete between 81-100% of the syllabus by year-end.

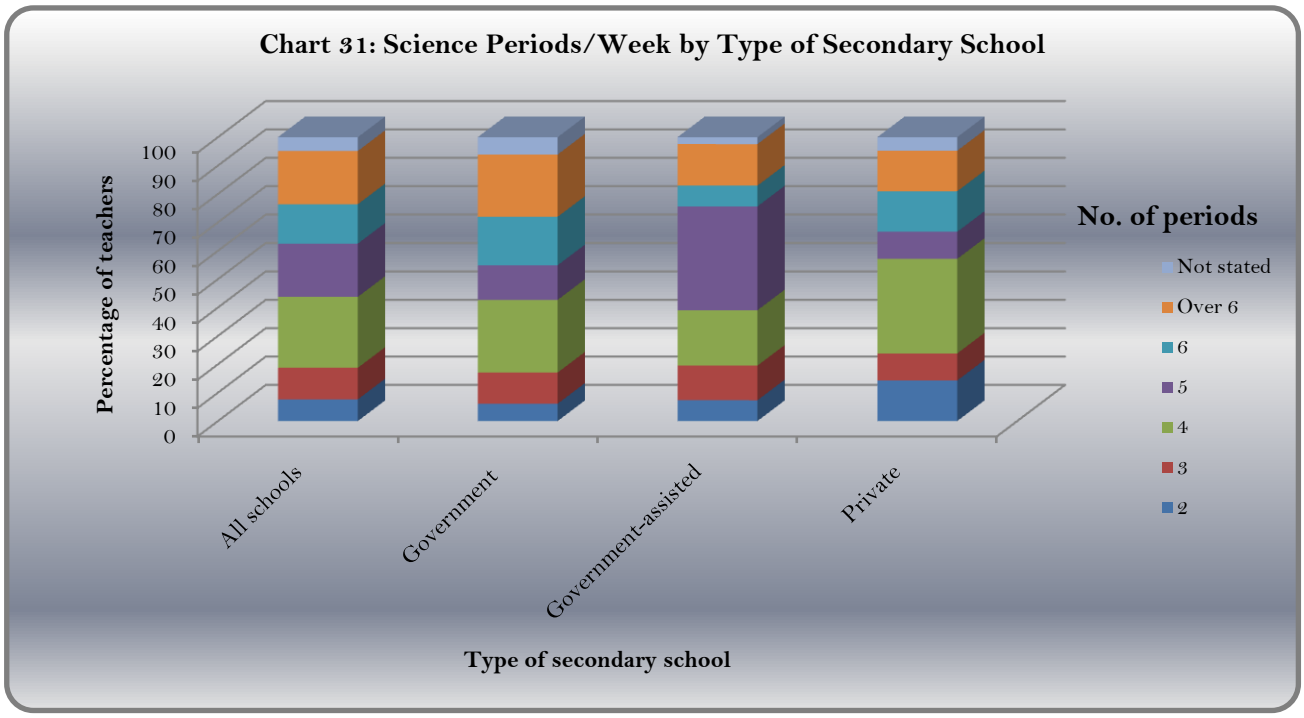


Source: Table 32

Table 33: Science Periods/Week by Type of Secondary School and Form

Type of secondary school	Form	No. of science periods/week							
		Total	2	3	4	5	6	Over 6	Not stated
		Percentage of science teachers							
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
All schools	All forms	100	8	11	25	19	14	19	5
	Form 1	100	6	16	35	13	6	16	6
	Form 2	100	11	14	36	11	11	18	0
	Form 3	100	8	27	35	12	4	8	8
	Form 4	100	3	0	14	34	29	17	3
	Form 5	100	13	0	4	21	17	38	8
Government	All forms	100	6	11	26	12	17	22	6
	Form 1	100	6	19	38	6	6	19	6
	Form 2	100	5	11	47	11	5	21	0
	Form 3	100	6	25	31	13	6	13	6
	Form 4	100	0	0	5	25	40	25	5
	Form 5	100	18	0	0	0	27	36	
Government-assisted	All forms	100	7	12	20	37	7	15	2
	Form 1	100	0	11	33	33	0	22	0
	Form 2	100	14	29	14	14	14	14	0
	Form 3	100	13	25	38	13	0	0	13
	Form 4	100	0	0	10	70	20	0	0
	Form 5	100	14	0	0	43	0	43	0
Private	All forms	100	14	10	33	10	14	14	5
	Form 1	100	17	17	33	0	17	0	17
	Form 2	100	50	0	0	0	50	0	0
	Form 3	100	0	50	50	0	0	0	0
	Form 4	100	20	0	60	0	0	20	0
	Form 5	100	0	0	17	33	17	33	0

Table 33 shows the frequency of science periods in the various types of secondary schools and forms. A quarter (25%) of the sample of teachers of all schools taught science for four periods a week and the same percentage (19%) for five and over six periods. A review of the data by form reveals that approximately a third of the teachers in forms 1-3 taught science for four periods in a week while a similar proportion of forms 4 (34%) and 5 (38%) teachers taught science for five and over six periods respectively. Over a third (37%) of the sample of science teachers in government-assisted schools taught science for five periods per week while 33% and 26% in private and government schools respectively taught science for 4 periods.

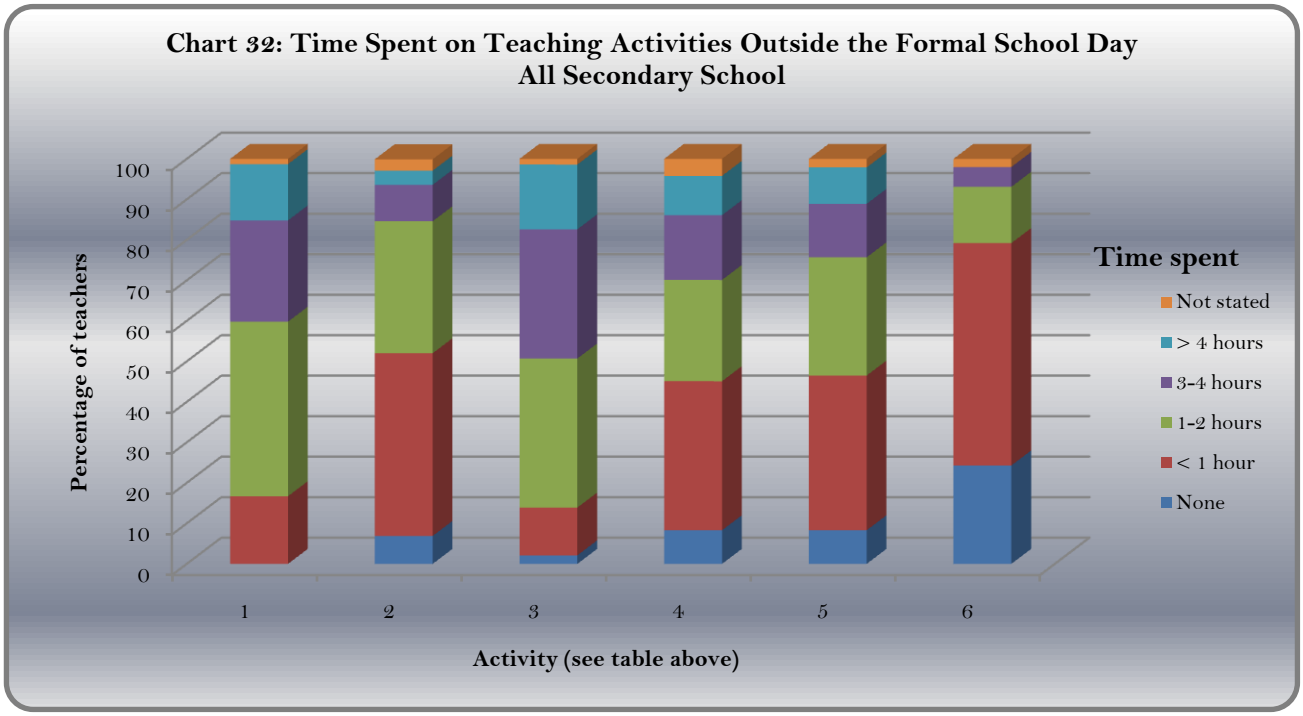


Source: Table 33

Table 34: Time Spent on Teaching Activities Outside the Formal School Day - All Secondary Schools

Activity	Time spent - percentage of science teachers						
	Total	None	< 1 hour	1-2 hours	3-4 hours	> 4 hours	Not stated
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 Preparing or grading student exams or homework	100	0	17	43	25	14	1
2 Meeting with students outside of classroom time	100	7	45	33	9	4	3
3 Planning future class sessions	100	2	12	37	32	16	1
4 Professional reading and development activity	100	8	37	25	16	10	4
5 Administrative tasks including staff meetings	100	8	38	29	13	9	2
6 Meeting with parents	100	24	55	14	5	0	2

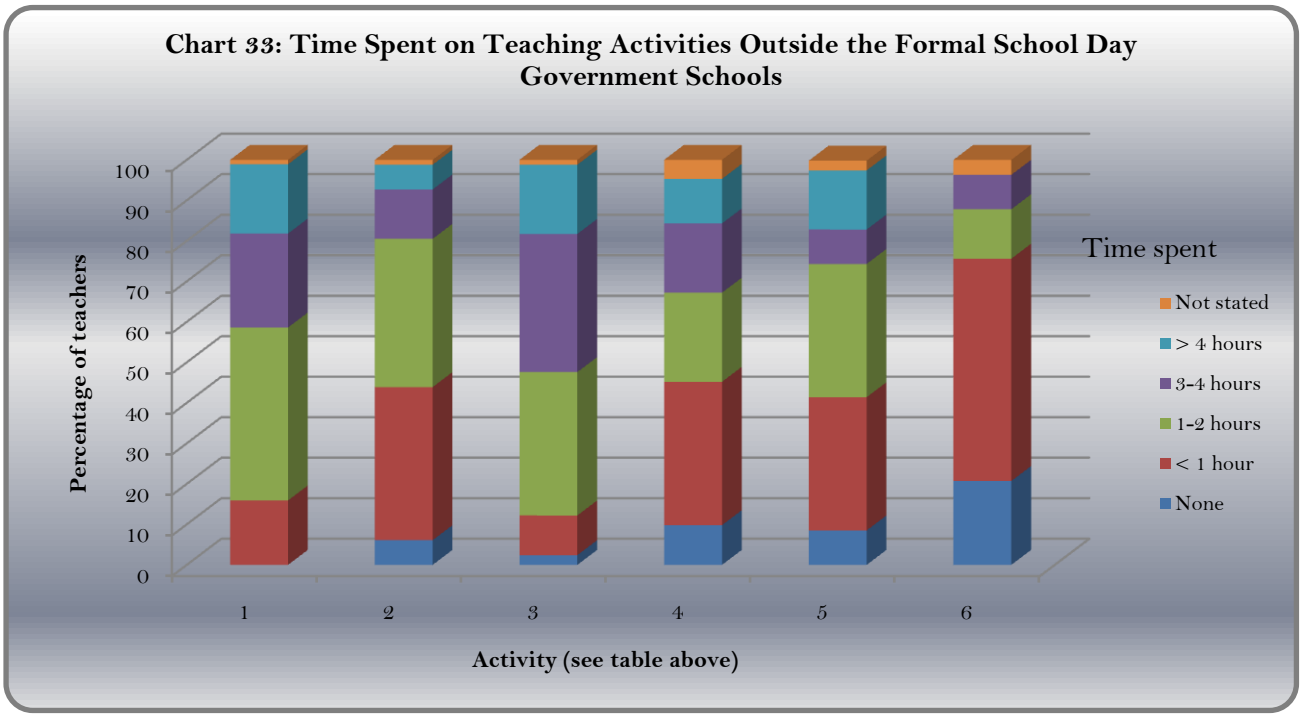
Tables 34-37 show that, of the above activities, teachers in general, devoted more time to, 'planning future class sessions', and, 'preparing or grading student exams or homework'. In addition, science teachers in private secondary schools spent considerable time on administrative tasks including staff meetings. Least time was spent, 'meeting with students outside of classroom time,' and 'meeting with parents'. Over a third (37%) of the teachers spent less than one hour on, 'professional reading and development', while one-quarter (25%) spent 1-2 hours.



Source: Table 34

Table 35: Time Spent on Teaching Activities Outside the Formal School Day - Government Schools

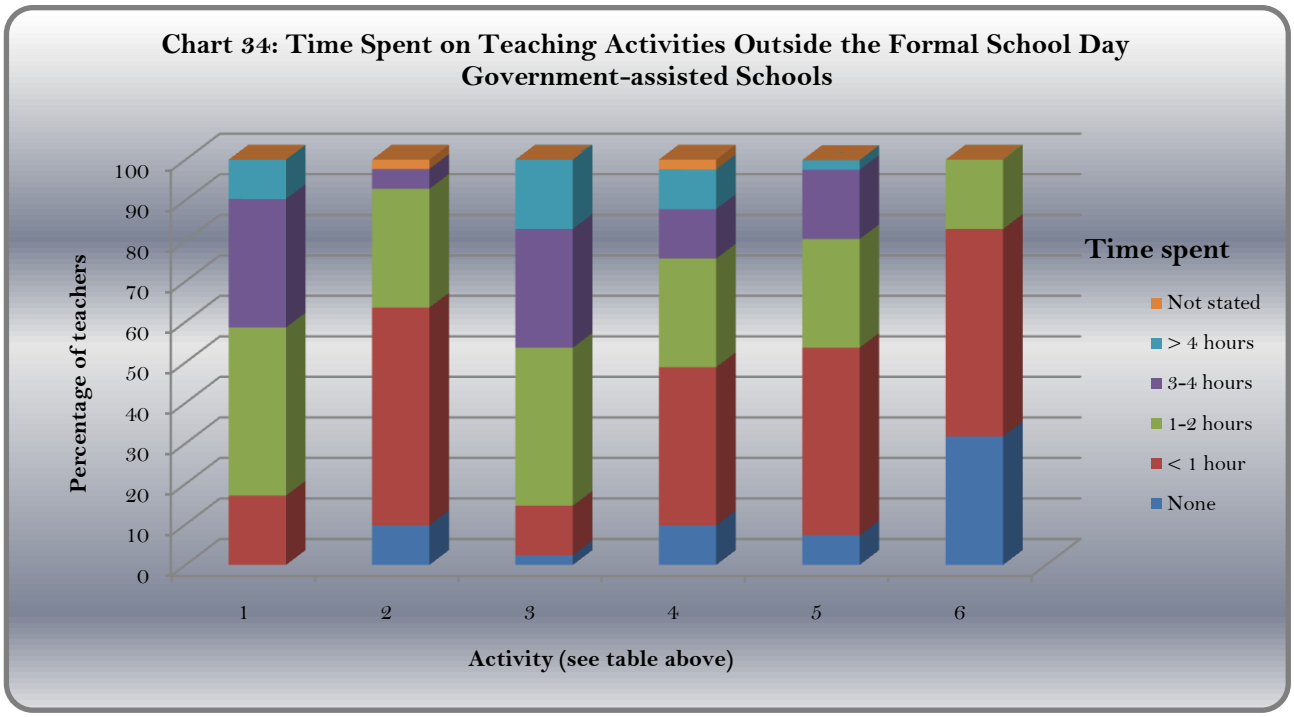
Activity	Time spent - percentage of science teachers						
	Total	None	< 1 hour	1-2 hours	3-4 hours	> 4 hours	Not stated
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 Preparing or grading student exams or homework	100	0	16	43	23	17	1
2 Meeting with students outside of classroom time	100	6	38	37	12	6	1
3 Planning future class sessions	100	2	10	35	34	17	1
4 Professional reading and development activity	100	10	35	22	17	11	5
5 Administrative tasks including staff meetings	100	9	33	33	9	15	2
6 Meeting with parents	100	21	55	12	9	0	4



Source: Table 35

Table 36: Time Spent on Teaching Activities Outside the Formal School Day - Government-assisted Schools

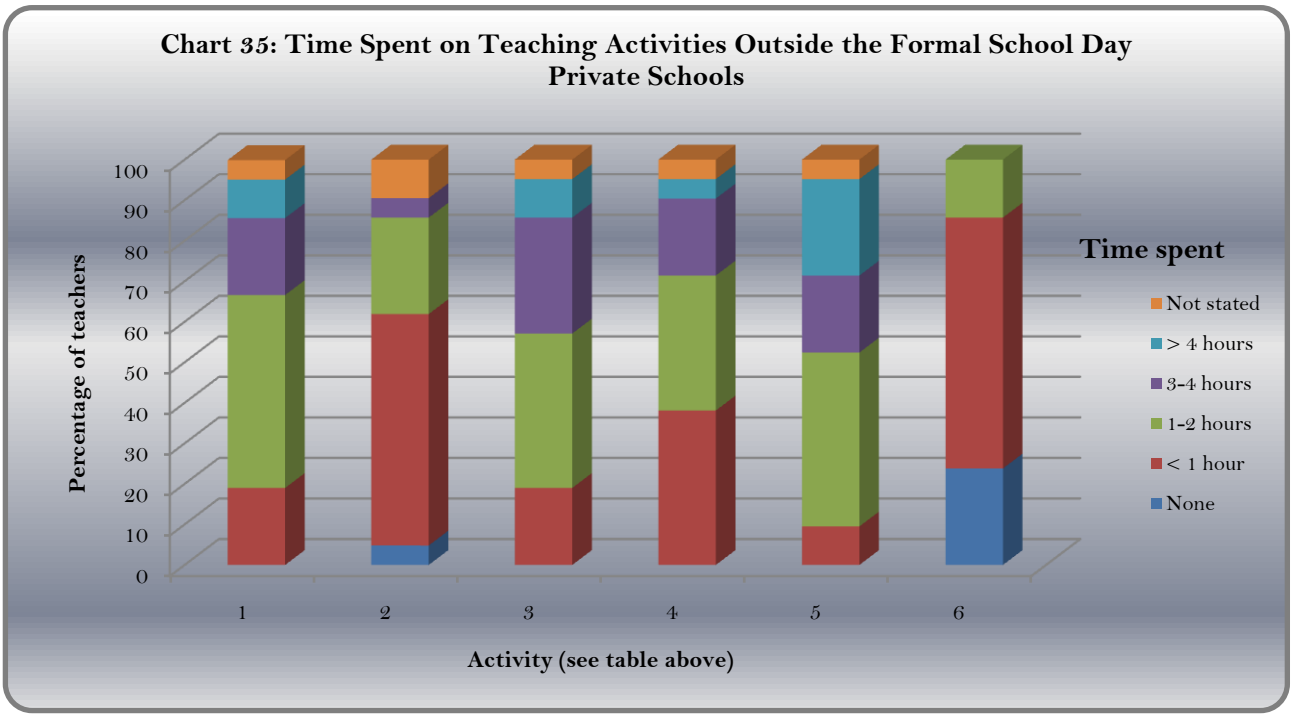
Activity	Time spent - percentage of science teachers						
	Total	None	< 1 hour	1-2 hours	3-4 hours	> 4 hours	Not stated
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 Preparing or grading student exams or homework	100	0	17	42	32	10	0
2 Meeting with students outside of classroom time	100	10	54	29	5	0	2
3 Planning future class sessions	100	2	12	39	29	17	0
4 Professional reading and development activity	100	10	39	27	12	10	2
5 Administrative tasks including staff meetings	100	7	46	27	17	2	0
6 Meeting with parents	100	32	51	17	0	0	0



Source: Table 36

Table 37: Time Spent on Teaching Activities Outside the Formal School Day - Private Schools

Activity	Time spent - percentage of science teachers						
	Total	None	< 1 hour	1-2 hours	3-4 hours	> 4 hours	Not stated
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 Preparing or grading student exams or homework	100	0	19	48	19	10	5
2 Meeting with students outside of classroom time	100	5	57	24	5	0	10
3 Planning future class sessions	100	0	19	38	29	10	5
4 Professional reading and development activity	100	0	38	33	19	5	5
5 Administrative tasks including staff meetings	100	0	10	43	19	24	5
6 Meeting with parents	100	24	62	14	0	0	0

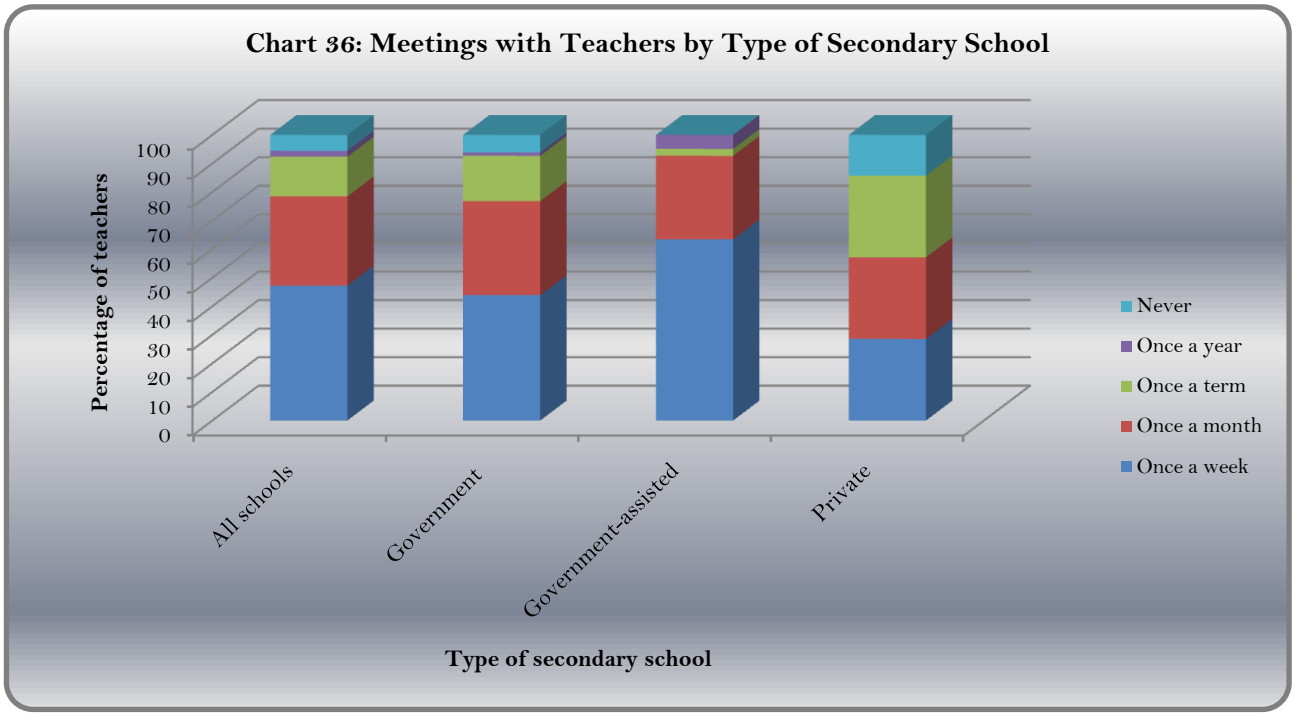


Source: Table 37

Table 38: Meetings with Teachers by Type of Secondary School

Type of secondary school	Frequency of meetings - percentage of science teachers					
	Total	Once a week	Once a month	Once a term	Once a year	Never
	(1)	(2)	(3)	(4)	(5)	(6)
All schools	100	47	31	14	2	6
Government	100	44	33	16	1	6
Government-assisted	100	63	29	2	5	0
Private	100	29	29	29	0	14

A substantial proportion (47%) of the science teachers, especially in the state-assisted schools (63%), attended weekly meetings with other teachers in their subject area to discuss and plan curriculum or teaching approaches while one-third (31%) attended monthly. A further review of the data by type of school shows that 29% of the private schools science teachers attended meetings once a term and 14% never attended.

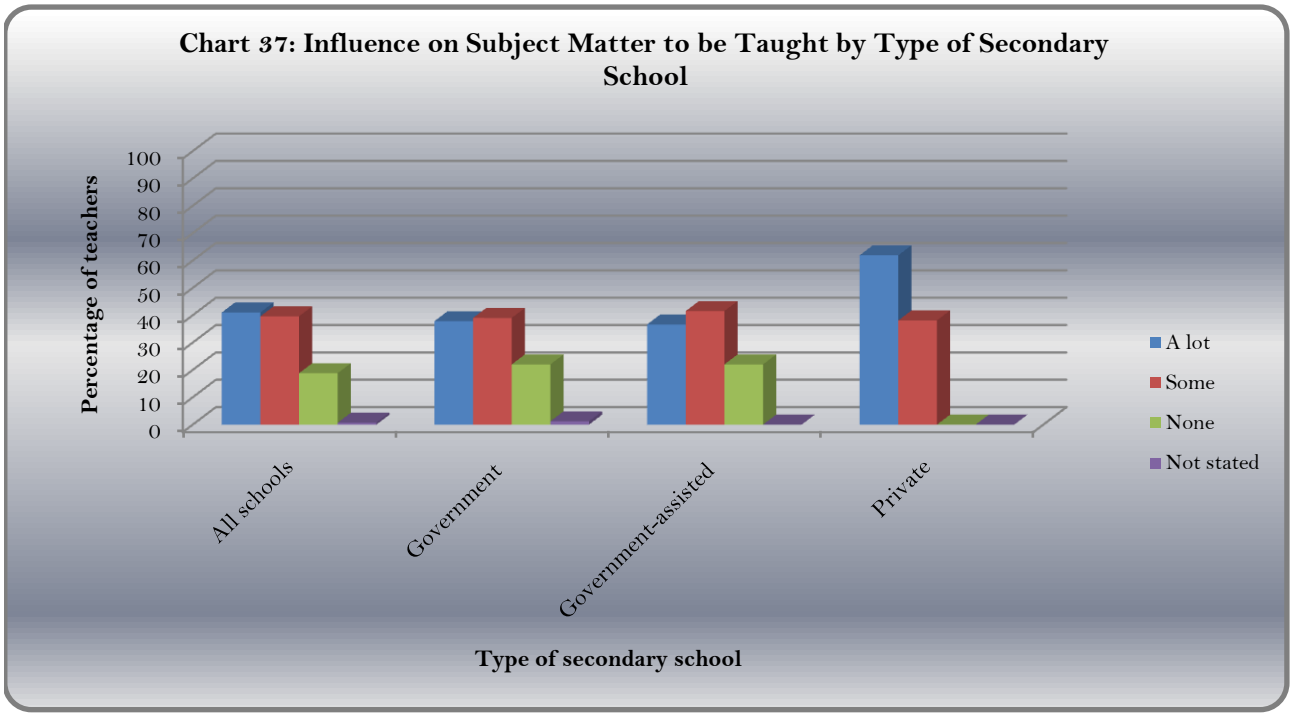


Source: Table 38

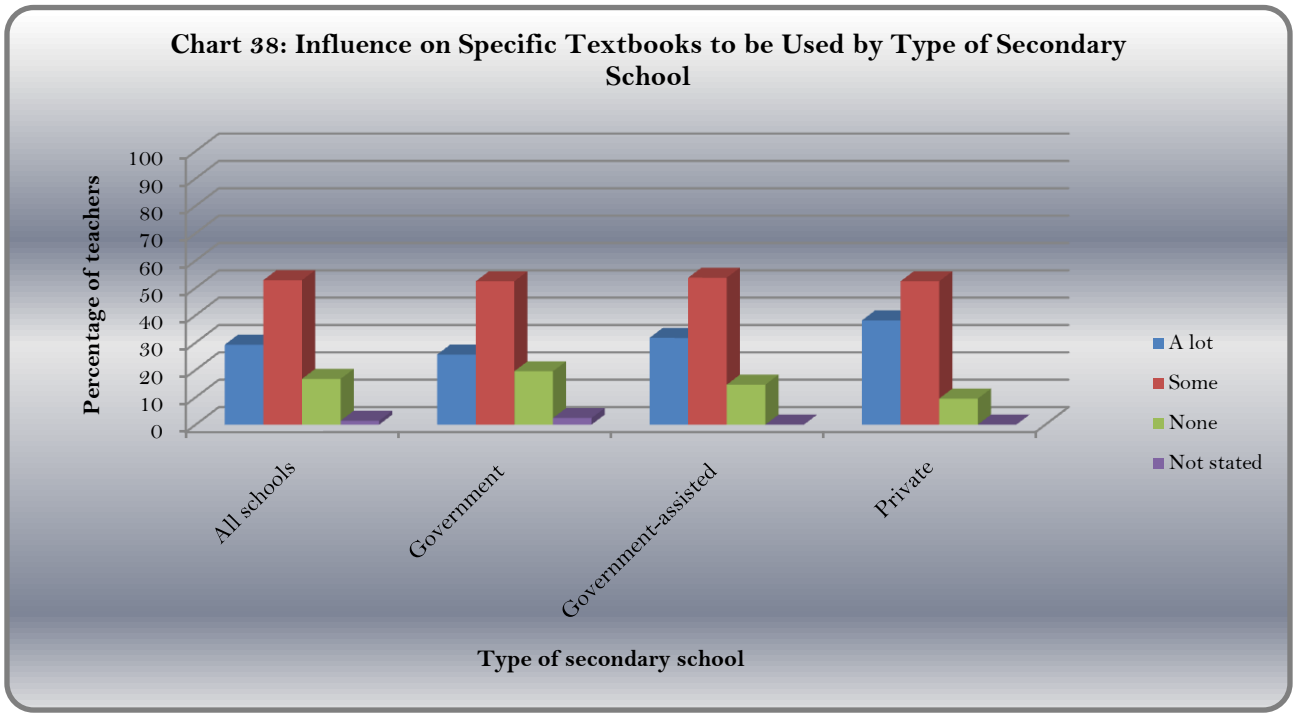
Table 39: Influence on Aspects of Teaching by Type of Secondary School

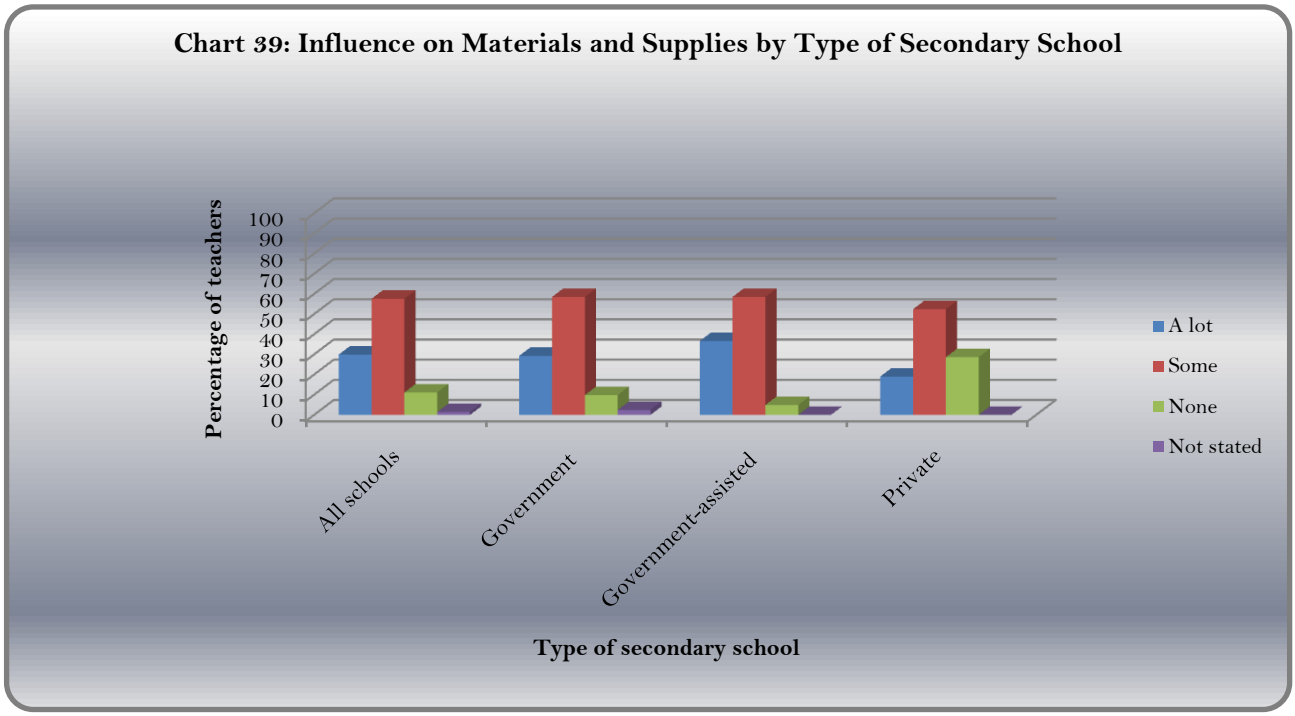
Type of secondary school	Aspect	Influence - percentage of science teachers				
		Total	A lot	Some	None	Not stated
		(1)	(2)	(3)	(4)	(5)
All schools	1 Subject matter to be taught	100	41	40	19	1
	2 Specific textbooks to be used	100	29	53	17	1
	3 Materials and supplies	100	30	58	11	1
Government	1 Subject matter to be taught	100	38	39	22	1
	2 Specific textbooks to be used	100	26	52	20	2
	3 Materials and supplies	100	29	59	10	2
Government-assisted	1 Subject matter to be taught	100	37	42	22	0
	2 Specific textbooks to be used	100	32	54	15	0
	3 Materials and supplies	100	37	59	5	0
Private	1 Subject matter to be taught	100	62	38	0	0
	2 Specific textbooks to be used	100	38	52	10	0
	3 Materials and supplies	100	19	52	29	0

Table 39 shows that two-fifths of the sample of science teachers had, 'a lot,' (41%) and, 'some,' (40%) influence on the subject matter to be taught. However, by comparison teachers' influence declined on the acquisition of specific textbooks, and materials and supplies. By type of school, the data reveal that a higher percentage of private school science teachers (62%) had, 'a lot,' of influence on the subject matter to be taught compared to their counterparts in government (38%) and government-assisted (37%) schools.



Source: Table 39



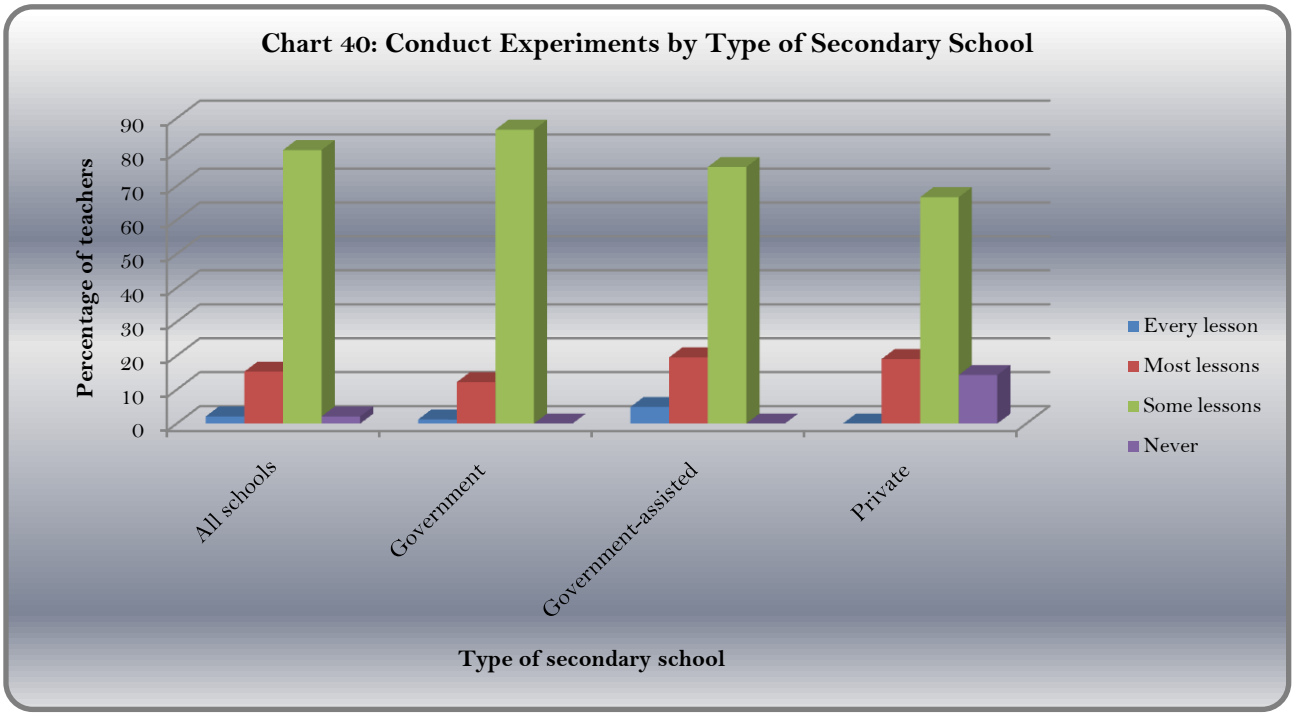


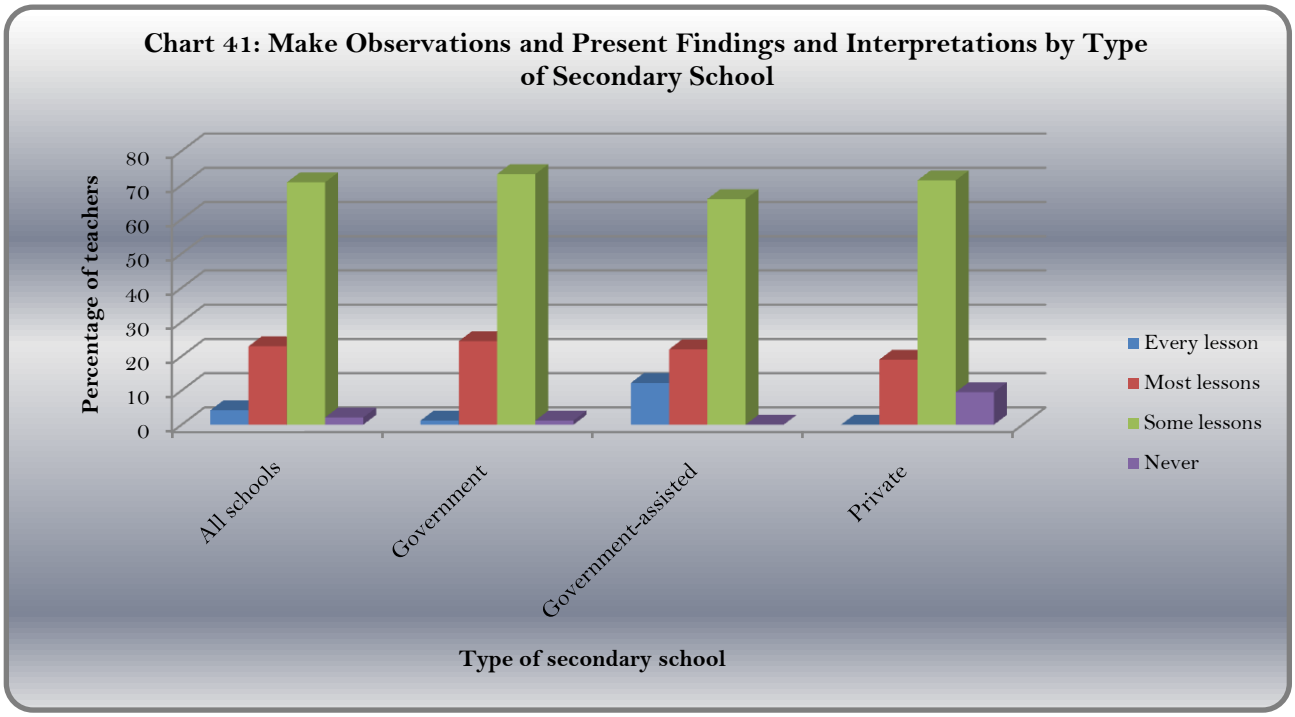
Source: Table 39

Table 40: Performance of Science Activities by Type of Secondary School

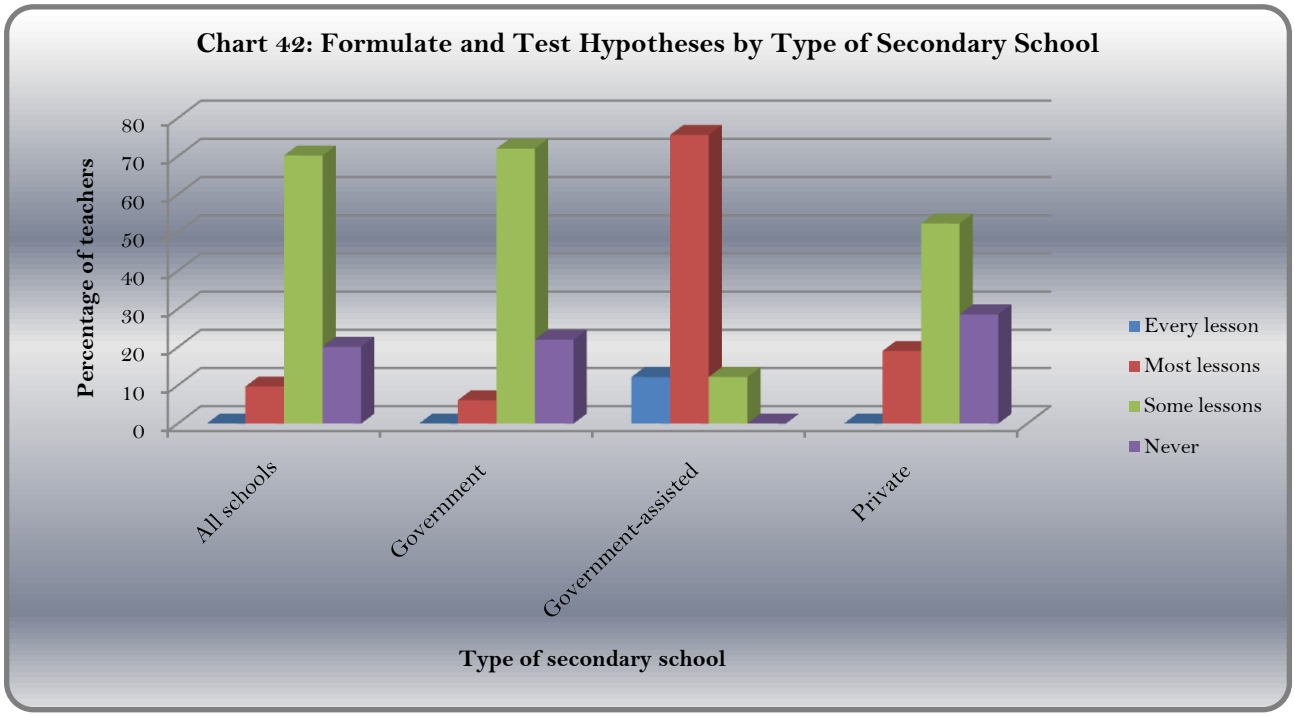
Type of secondary school	Activity	Frequency of activity - percentage of science teachers				
		Total	Every lesson	Most lessons	Some lessons	Never
		(1)	(2)	(3)	(4)	(5)
All schools	1 Conduct experiments	100	2	15	81	2
	2 Make observations and present findings and interpretations	100	4	23	71	2
	3 Formulate and test hypotheses	100	0	10	70	20
	4 Explain scientific principles and concepts	100	22	43	33	3
Government	1 Conduct experiments	100	1	12	87	0
	2 Make observations and present findings and interpretations	100	1	24	73	1
	3 Formulate and test hypotheses	100	0	6	72	22
	4 Explain scientific principles and concepts	100	16	45	37	2
Government-assisted	1 Conduct experiments	100	5	20	76	0
	2 Make observations and present findings and interpretations	100	12	22	66	0
	3 Formulate and test hypotheses	100	12	76	12	0
	4 Explain scientific principles and concepts	100	29	39	32	0
Private	1 Conduct experiments	100	0	19	67	14
	2 Make observations and present findings and interpretations	100	0	19	71	10
	3 Formulate and test hypotheses	100	0	19	52	29
	4 Explain scientific principles and concepts	100	29	43	19	10

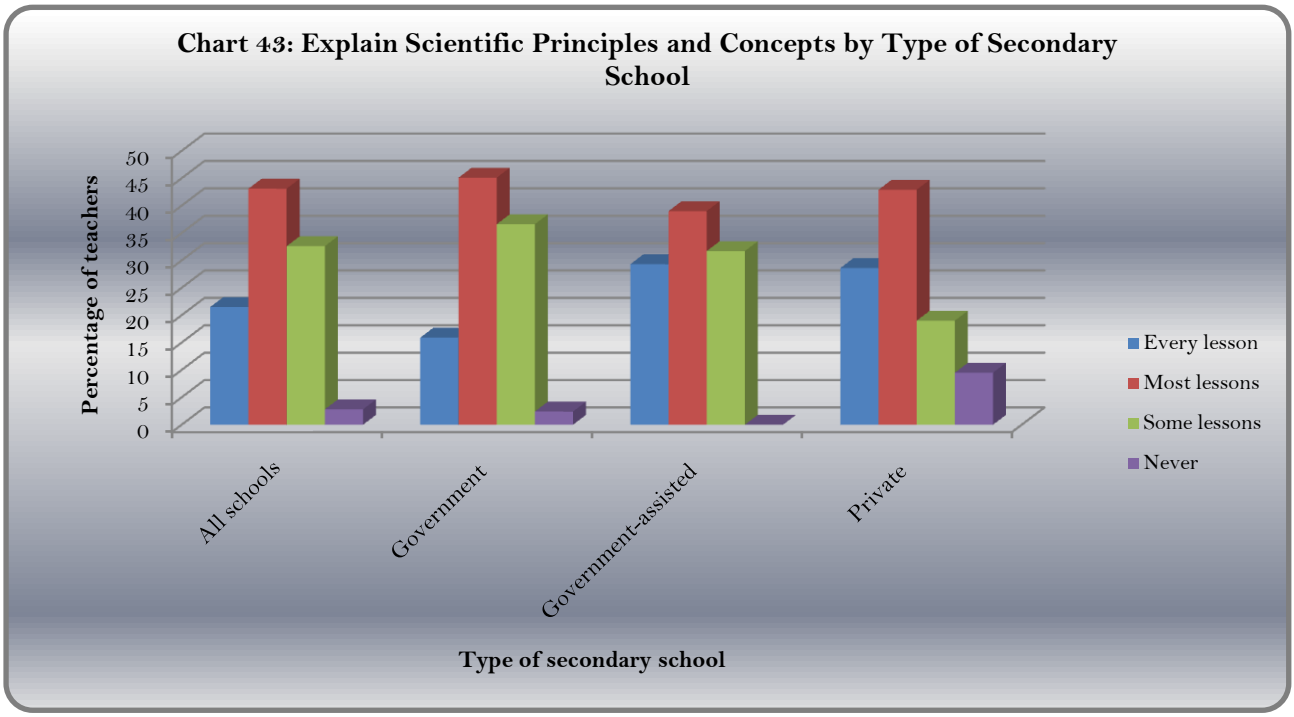
Table 40 and charts 40-43 show the frequency with which students were asked by teachers to perform the above-mentioned activities. The data reveal that the most frequently performed scientific activity was to explain scientific principles and concepts at, 'every lesson,' (22%) and, 'most lessons,' (43%). At, 'some lessons', the majority of teachers indicated that students conduct experiments (81%), make observations and present findings and interpretations (71%), and formulate and test hypotheses (70%).





Source: Table 40



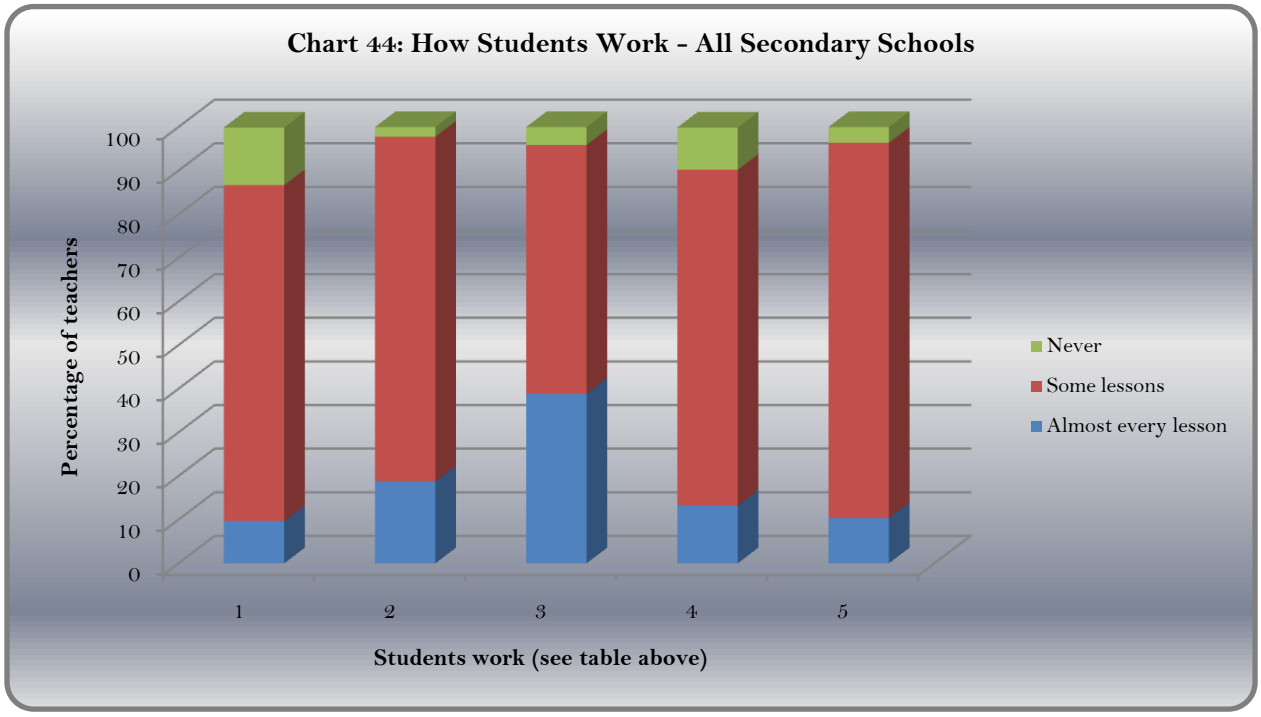


Source: Table 40

Table 41: How Students Work - All Secondary Schools

Students work	Frequency - percentage of science teachers			
	Total	Almost every lesson	Some lessons	Never
	(1)	(2)	(3)	(4)
1 Individually without assistance from the teacher	100	10	77	13
2 Individually with assistance from the teacher	100	19	79	3
3 Together as a class with the teacher teaching the whole class	100	39	57	4
4 Together as a class with students responding to one another	100	13	77	10
5 In pairs or small groups	100	10	86	4

The majority of the science teachers indicated that students worked individually without assistance from the teacher (77%), individually with assistance from the teacher (79%), together as a class with students responding to one another (77%), and in pairs or small groups (86%) at, 'some lessons,' while two-fifths (39%) stated that students worked together as a class with the teacher teaching the whole class at, 'almost every lesson'. A quarter (24%) of the teachers in private secondary schools indicated that students worked together as a class with students responding to one another at, 'almost every lesson,' compared to 11% and 12% of the teachers in government and government-assisted schools respectively (Tables 41-44).



Source: Table 41

Table 42: How Students Work - Government Schools

Students work	Frequency - percentage of science teachers			
	Total	Almost every lesson	Some lessons	Never
	(1)	(2)	(3)	(4)
1 Individually without assistance from the teacher	100	10	74	16
2 Individually with assistance from the teacher	100	22	77	1
3 Together as a class with the teacher teaching the whole class	100	35	61	4
4 Together as a class with students responding to one another	100	11	82	7
5 In pairs or small groups	100	12	85	2

Table 43: How Students Work - Government-assisted Schools

Students work	Frequency - percentage of science teachers			
	Total	Almost every lesson	Some lessons	Never
	(1)	(2)	(3)	(4)
1 Individually without assistance from the teacher	100	7	80	12
2 Individually with assistance from the teacher	100	17	78	5
3 Together as a class with the teacher teaching the whole class	100	42	54	5
4 Together as a class with students responding to one another	100	12	78	10
5 In pairs or small groups	100	7	88	5

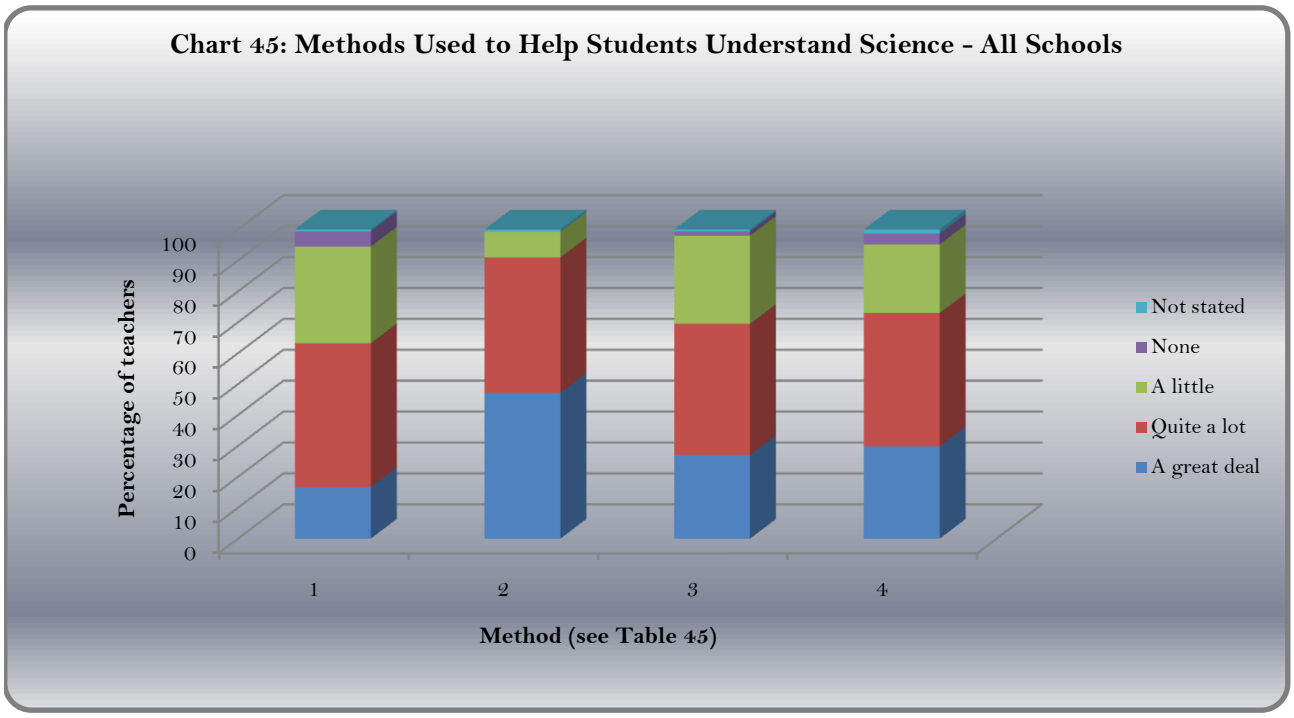
Table 44: How Students Work - Private Schools

Students work	Frequency - percentage of science teachers			
	Total	Almost every lesson	Some lessons	Never
	(1)	(2)	(3)	(4)
1 Individually without assistance from the teacher	100	14	81	5
Individually with assistance from the teacher		10	86	5
3 Together as a class with the teacher teaching the whole class	100	48	48	5
4 Together as a class with students responding to one another	100	24	57	19
5 In pairs or small groups	100	10	81	10

Table 45: Methods Used to Help Students Understand Science by Type of Secondary School

Type of secondary school	Method	Weighting - percentage of science teachers					
		Total	A great deal	Quite a lot	A little	None	Not stated
		(1)	(2)	(3)	(4)	(5)	(6)
All schools	1 Using textbook examples for homework assignments	100	17	47	31	5	1
	2 Explanations given by the teacher	100	47	44	8	0	1
	3 Experiments/demonstrations done by the teacher	100	27	42	29	1	1
	4 Experiments done by the students	100	30	43	22	4	1
Government	1 Using textbook examples for homework assignments	100	16	42	37	6	0
	2 Explanations given by the teacher	100	45	49	6	0	0
	3 Experiments/demonstrations done by the teacher	100	26	44	31	0	0
	4 Experiments done by the students	100	31	44	23	2	0
Government-assisted	1 Using textbook examples for homework assignments	100	17	54	22	5	2
	2 Explanations given by the teacher	100	54	32	12	0	2
	3 Experiments/demonstrations done by the teacher	100	34	46	15	2	2
	4 Experiments done by the students	100	37	49	12	0	2
Private	1 Using textbook examples for homework assignments	100	19	52	29	0	0
	2 Explanations given by the teacher	100	43	48	10	0	0
	3 Experiments/demonstrations done by the teacher	100	19	29	48	5	0
	4 Experiments done by the students	100	14	29	38	14	5

The table above shows the weight given to the different methods used to help students understand science by type of secondary school. An examination of the data indicates that the most weight was allocated to explanations given by the teacher, 'a great deal,' (47%) and, 'quite a lot,' (44%); this pattern was also observed in all types of school. Experiments and demonstrations by teachers, and experiments by students in government and government-assisted schools also received substantial rating as teaching methods.

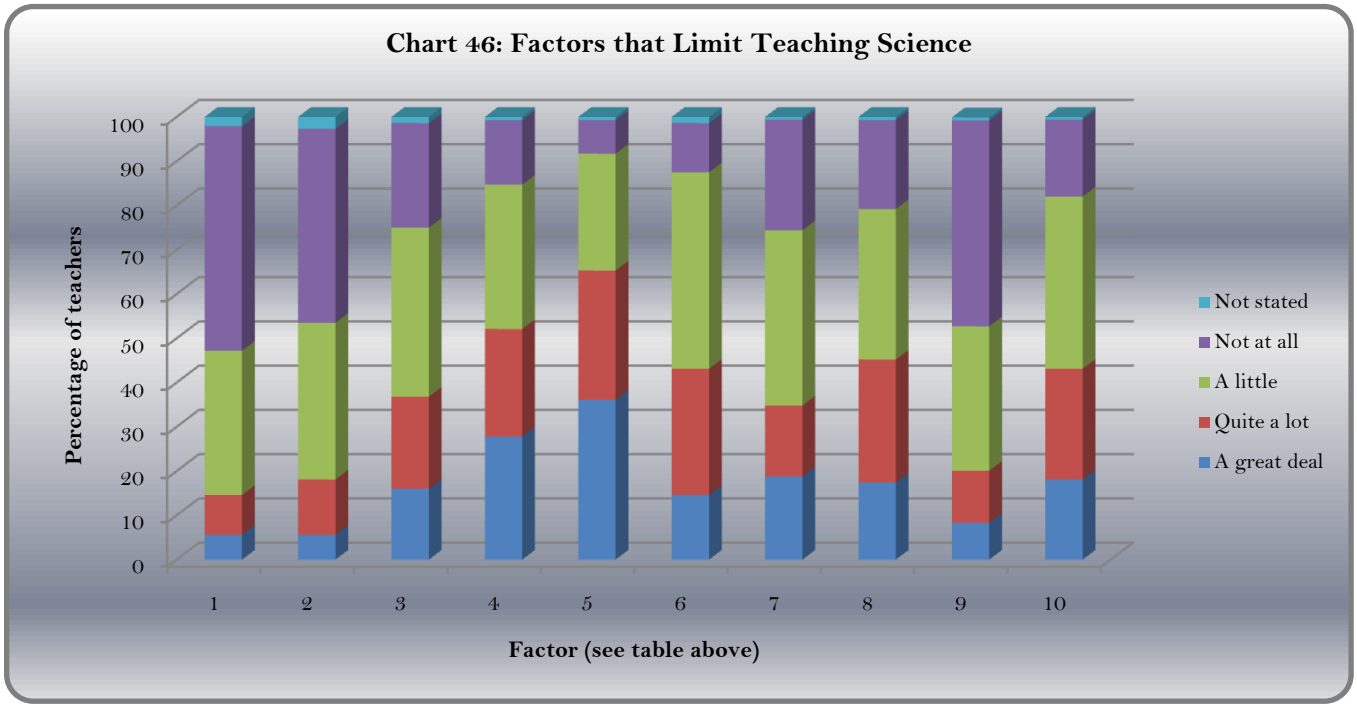


Source: Table 45

Table 46: Factors that Limit Teaching Science - All Secondary Schools

Factor	Affect - percentage of science teachers					
	Total	A great deal	Quite a lot	A little	Not at all	Not stated
	(1)	(2)	(3)	(4)	(5)	(6)
1 Explanation of scientific principles and concepts	100	6	9	33	51	2
2 Using simple resources to performing science experiments	100	6	13	35	44	3
3 Students who come from a wide range of backgrounds	100	16	21	38	24	1
4 Disruptive students	100	28	24	33	15	1
5 Lack of parental interest in children's learning and progress	100	36	29	26	8	1
6 Shortage of other instructional equipment for students' use	100	15	29	44	11	1
7 High student/teacher ratio	100	19	16	40	25	1
8 Inadequate physical facilities	100	17	28	34	20	1
9 Threat(s) to personal safety or the safety of students	100	8	12	33	47	1
10 Student absenteeism	100	18	25	39	17	1

Table 46-49 represent the sample of secondary school science teachers' responses to factors that limited their teaching of the subject. In general (Table 46), a substantial proportion of teachers reported that lack of parental interest in children's learning and progress (65%) and disruptive students (52%), mainly in government schools, limited their teaching of science, 'a great deal,' and, 'quite a lot'. Further review of the data by type of school reveals that a relatively large percentage (51%) of teachers in government schools identified student absenteeism, and students who come from a wide range of backgrounds, as factors that impacted considerably on teaching (Table 47).



Source: Table 46

Table 47: Factors that Limit Teaching Science - Government Schools

Factor	Affect - percentage of science teachers					
	Total	A great deal	Quite a lot	A little	Not at all	Not stated
	(1)	(2)	(3)	(4)	(5)	(6)
1 Explanation of scientific principles and concepts	100	7	6	39	45	2
2 Using simple resources to performing science experiments	100	7	12	37	43	1
3 Students who come from a wide range of backgrounds	100	22	29	31	17	1
4 Disruptive students	100	34	28	26	12	0
5 Lack of parental interest in children's learning and progress	100	43	33	21	4	0
6 Shortage of other instructional equipment for students' use	100	13	29	44	12	1
7 High student/teacher ratio	100	21	11	40	28	0
8 Inadequate physical facilities	100	18	26	35	21	0
9 Threat(s) to personal safety or the safety of students	100	7	16	32	45	0
10 Student absenteeism	100	23	28	38	11	0

Table 48: Factors that Limit Teaching Science - Government-assisted Schools

Factor	Affect - percentage of science teachers					
	Total	A great deal	Quite a lot	A little	Not at all	Not stated
	(1)	(2)	(3)	(4)	(5)	(6)
1 Explanation of scientific principles and concepts	100	5	5	29	59	2
2 Using simple resources to performing science experiments	100	5	15	22	54	5
3 Students who come from a wide range of backgrounds	100	7	10	56	24	2
4 Disruptive students	100	24	12	46	15	2
5 Lack of parental interest in children's learning and progress	100	27	22	34	15	2
6 Shortage of other instructional equipment for students' use	100	12	24	54	7	2
7 High student/teacher ratio	100	17	27	39	15	2
8 Inadequate physical facilities	100	15	29	34	20	2
9 Threat(s) to personal safety or the safety of students	100	12	7	34	44	2
10 Student absenteeism	100	12	20	39	27	2

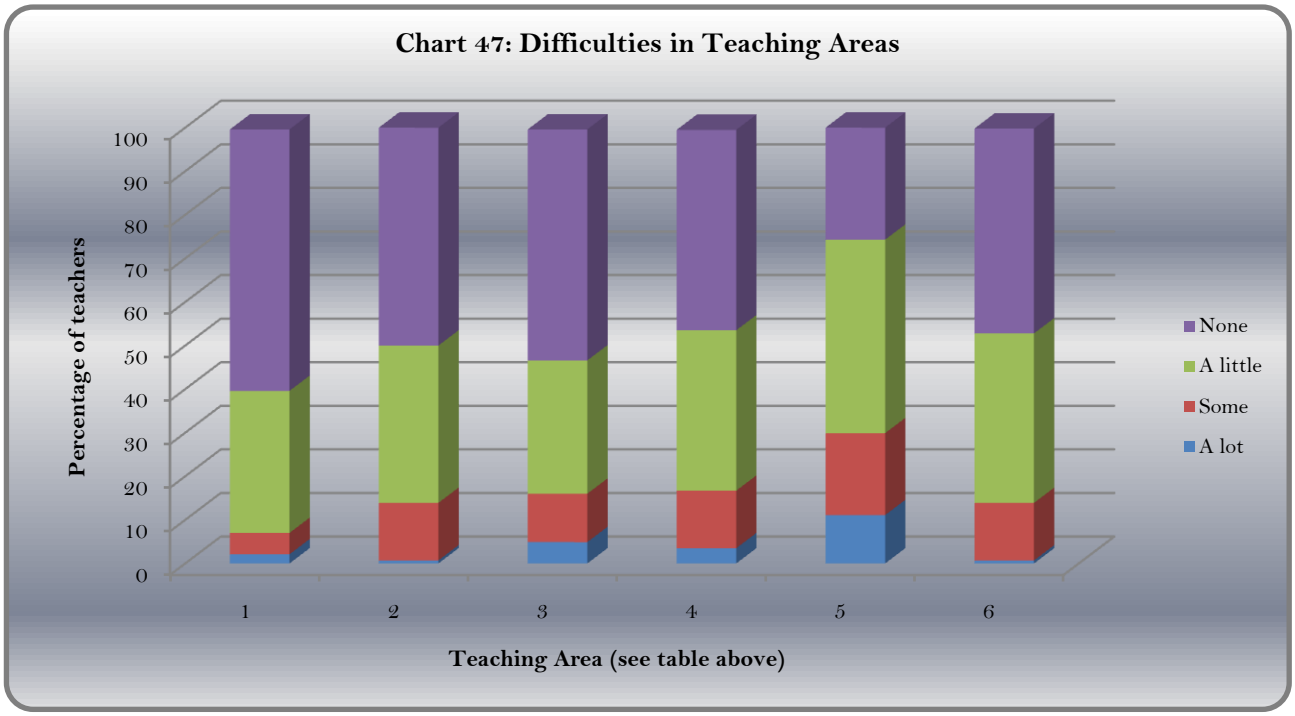
Table 49: Factors that Limit Teaching Science - Private Schools

Factor	Affect - percentage of science teachers					
	Total	A great deal	Quite a lot	A little	Not at all	Not stated
	(1)	(2)	(3)	(4)	(5)	(6)
1 Explanation of scientific principles and concepts	100	0	29	14	57	0
2 Using simple resources to performing science experiments	100	0	10	57	29	5
3 Students who come from a wide range of backgrounds	100	10	10	33	48	0
4 Disruptive students	100	10	33	33	24	0
5 Lack of parental interest in children's learning and progress	100	29	29	33	10	0
6 Shortage of other instructional equipment for students' use	100	24	33	29	14	0
7 High student/teacher ratio	100	14	14	38	33	0
8 Inadequate physical facilities	100	19	33	29	19	0
9 Threat(s) to personal safety or the safety of students	100	5	5	33	57	0
10 Student absenteeism	100	10	24	43	24	0

Table 50: Difficulties in Teaching Areas - All Secondary Schools

Teaching area	Difficulty - percentage of science teachers				
	Total	A lot	Some	A little	None
	(1)	(2)	(3)	(4)	(5)
1 Planning the lesson	100	2	5	33	60
2 Teaching strategies	100	1	13	36	50
3 Using teaching resources including equipment	100	5	11	31	53
4 Classroom management	100	4	13	37	46
5 Diagnosis and remediation	100	11	19	44	26
6 Assessment strategies	100	1	13	39	47

The majority of science teachers encountered little or no difficulty in the various teaching areas identified above. One-fifth (19%) of the teachers experienced, 'some,' difficulty with diagnosis and remediation, and 11% reported, 'a lot'.

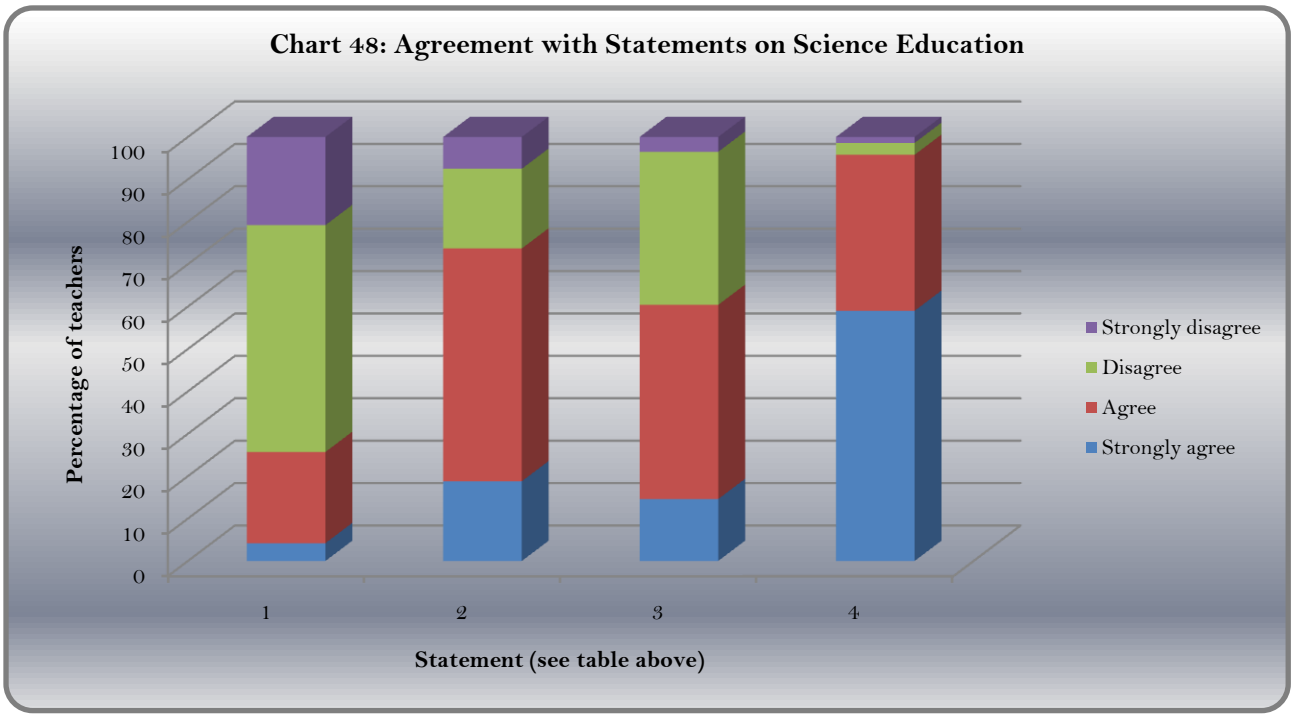


Source: Table 50

Table 51: Agreement with Statements on Science Education - All Secondary Schools

Statement	Total	Strongly agree	Agree	Disagree	Strongly disagree
	(1)	(2)	(3)	(4)	(5)
1 Students are not interested in science at the secondary level.	100	4	22	54	21
2 Some students have a natural talent for science and others do not.	100	19	55	19	8
3 Too often the class is intrigued by scientific demonstrations while not grasping the underlying principles.	100	15	46	36	4
4 An understanding of how students learn is essential for teaching science.	100	59	37	3	1

Almost all (96%) of the science teachers in both public and private secondary schools who participated in the survey agreed with the statement; 'an understanding of how students learn is essential for teaching science,' (Tables 51-54). There was also substantial agreement on, 'some students have a natural talent for science and others do not,' (74%) and, 'too often the class is intrigued by scientific demonstrations while not grasping the underlying principles,' (61%). Three-quarters (75%) of the teachers disagreed that students were not interested in science at the secondary school level.



Source: Table 51

Table 52: Agreement with Statements on Science Education - Government Schools

Statement	Total	Strongly agree	Agree	Disagree	Strongly disagree
	(1)	(2)	(3)	(4)	(5)
1 Students are not interested in science at the secondary level.	100	7	26	54	13
2 Some students have a natural talent for science and others do not.	100	13	62	17	7
3 Too often the class is intrigued by scientific demonstrations while not grasping the underlying principles.	100	22	43	34	1
4 An understanding of how students learn is essential for teaching science.	100	52	43	2	2

Table 53: Agreement with Statements on Science Education - Government-assisted Schools

Statement	Total	Strongly agree	Agree	Disagree	Strongly disagree
	(1)	(2)	(3)	(4)	(5)
1 Students are not interested in science at the secondary level.	100	0	15	49	37
2 Some students have a natural talent for science and others do not.	100	24	46	22	7
3 Too often the class is intrigued by scientific demonstrations while not grasping the underlying principles.	100	5	51	34	10
4 An understanding of how students learn is essential for teaching science.	100	66	29	5	0

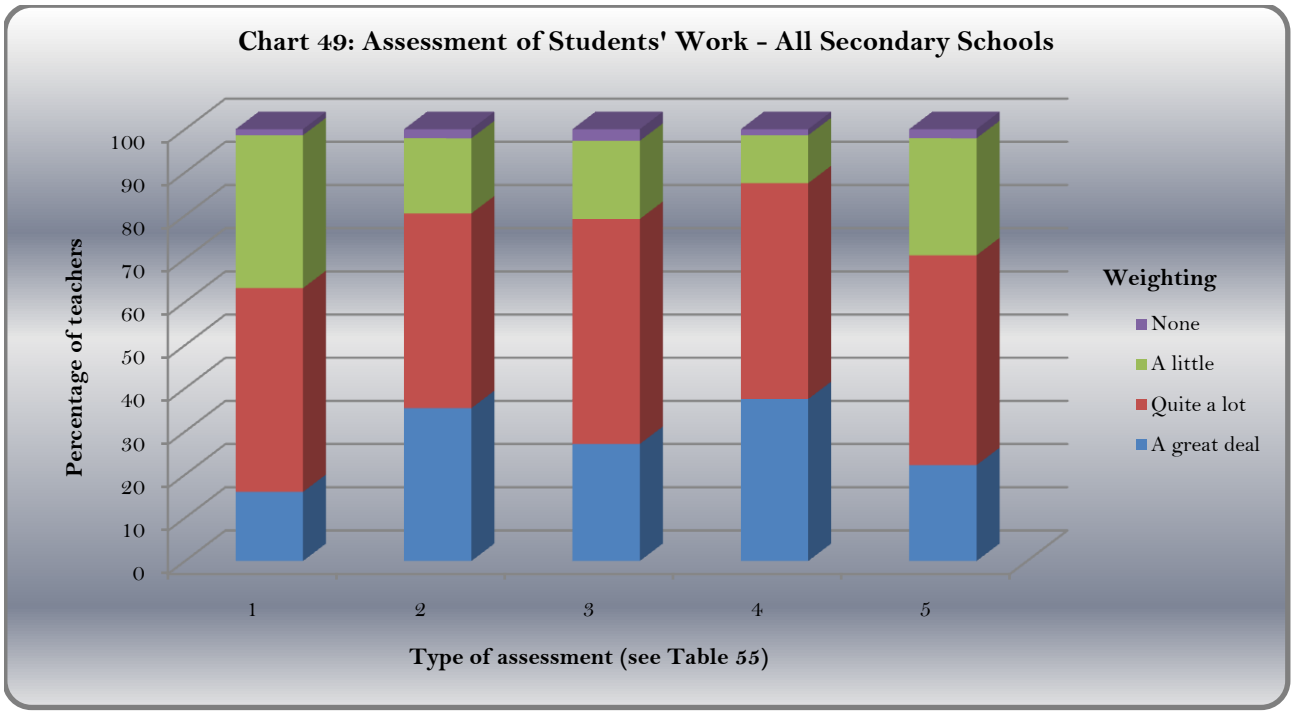
Table 54: Agreement with Statements on Science Education - Private Schools

Statement	Total	Strongly agree	Agree	Disagree	Strongly disagree
	(1)	(2)	(3)	(4)	(5)
1 Students are not interested in science at the secondary level.	100	0	19	62	19
2 Some students have a natural talent for science and others do not.	100	29	43	19	10
3 Too often the class is intrigued by scientific demonstrations while not grasping the underlying principles.	100	5	48	48	0
4 An understanding of how students learn is essential for teaching science.	100	71	29	0	0

Table 55: Assessment of Students' Work by Type of Secondary Schools

Type of secondary school	Type of assessment	Weighting - percentage of science teachers				
		Total	A great deal	Quite a lot	A little	None
		(1)	(2)	(3)	(4)	(5)
All schools	1 Homework assignments	100	16	47	35	1
	2 Responses of students in class	100	35	45	17	2
	3 Laboratory work	100	27	52	18	3
	4 Teacher made tests	100	38	50	11	1
	5 Projects	100	22	49	27	2
Government	1 Homework assignments	100	16	42	42	1
	2 Responses of students in class	100	37	44	16	4
	3 Laboratory work	100	22	61	17	0
	4 Teacher made tests	100	32	56	12	0
	5 Projects	100	21	51	24	4
Government-assisted	1 Homework assignments	100	17	56	24	2
	2 Responses of students in class	100	37	49	15	0
	3 Laboratory work	100	34	49	17	0
	4 Teacher made tests	100	46	37	15	2
	5 Projects	100	24	44	32	0
Private	1 Homework assignments	100	14	52	33	0
	2 Responses of students in class	100	29	43	29	0
	3 Laboratory work	100	33	24	24	19
	4 Teacher made tests	100	43	52	0	5
	5 Projects	100	24	48	29	0

Table 55 shows the weight that science teachers assigned to the various types of assessment indicators of students' work. The most weight was given to teacher-made tests, 'a great deal,' (38%) and, 'quite a lot,' (50%) and similarly to responses from students in class, 'a great deal,' (35%) and, 'quite a lot,' (45%). Laboratory work, 'a great deal,' (27%) and, 'quite a lot,' (52%), and projects, 'a great deal,' (22%) and, 'quite a lot,' (49%) also received high ratings from the majority of science teachers. Homework assignments, which received, 'a little,' weight by a third (35%) of the teachers, was the least significant method of assessment.



Source: Table 55

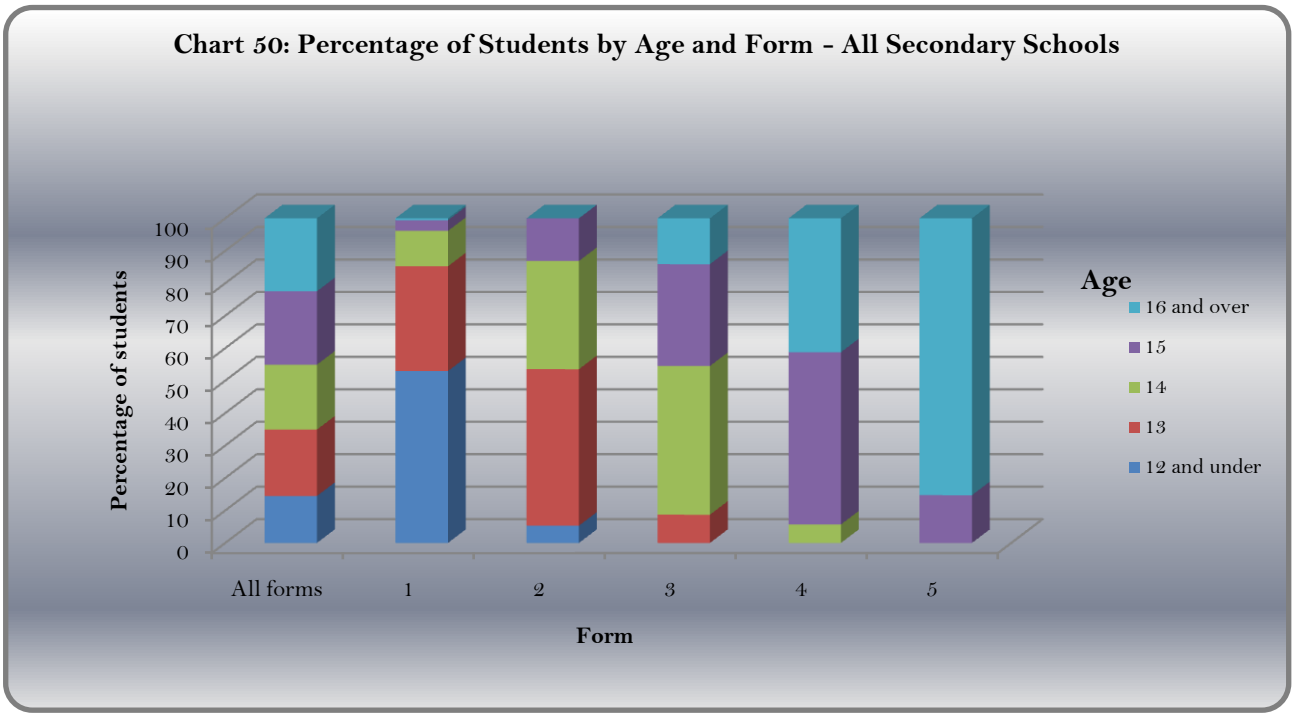
Table 56: No. of Students by Type of Secondary School, Form and Age

Type of secondary school	Form	Age group (years)					
		Total	12 and under	13	14	15	16 and over
		(1)	(2)	(3)	(4)	(5)	(6)
All schools	All forms	3394	491	694	679	767	763
	Form 1	852	451	275	93	28	5
	Form 2	753	40	363	251	99	0
	Form 3	644	0	56	295	202	91
	Form 4	703	0	0	40	373	290
	Form 5	442	0	0	0	65	377
Government	All forms	1774	211	353	414	435	361
	Form 1	431	192	155	67	17	0
	Form 2	434	19	161	169	85	0
	Form 3	387	0	37	160	123	67
	Form 4	325	0	0	18	180	127
	Form 5	197	0	0	0	30	167
Government-assisted	All forms	1220	222	242	192	275	289
	Form 1	270	206	57	7	0	0
	Form 2	241	16	167	51	7	0
	Form 3	215	0	18	117	60	20
	Form 4	321	0	0	17	180	124
	Form 5	173	0	0	0	28	145
Private	All forms	400	58	99	73	57	113
	Form 1	151	53	63	19	11	5
	Form 2	78	5	35	31	7	0
	Form 3	42	0	1	18	19	4
	Form 4	57	0	0	5	13	39
	Form 5	72	0	0	0	7	65

Table 57: Percentage of Students by Type of Secondary School and Age within Form

Type of secondary school	Form	Age (years)					
		Total	12 and under	13	14	15	16 and over
		percentage of students					
		(1)	(2)	(3)	(4)	(5)	(6)
All schools	All forms	100	14	20	20	23	23
	Form 1	100	53	32	11	3	1
	Form 2	100	5	48	33	13	0
	Form 3	100	0	9	46	31	14
	Form 4	100	0	0	6	53	41
	Form 5	100	0	0	0	15	85
Government	All forms	100	12	20	23	25	20
	Form 1	100	45	36	16	4	0
	Form 2	100	4	37	39	20	0
	Form 3	100	0	10	41	32	17
	Form 4	100	0	0	6	55	39
	Form 5	100	0	0	0	15	85
Government-assisted	All forms	100	18	20	16	23	24
	Form 1	100	76	21	3	0	0
	Form 2	100	7	69	21	3	0
	Form 3	100	0	8	54	28	9
	Form 4	100	0	0	5	56	39
	Form 5	100	0	0	0	16	84
Private	All forms	100	15	25	18	14	28
	Form 1	100	35	42	13	7	3
	Form 2	100	6	45	40	9	0
	Form 3	100	0	2	43	45	10
	Form 4	100	0	0	9	23	68
	Form 5	100	0	0	0	10	90

The table above shows the age distribution of the sample of secondary school science students who participated in the survey. Students ages ranged from 12 and under (14%) to 16 and over (23%). A review of the data by form reveals that the majority (53%) of form 1 students was 12 years and under, while students in forms 2 (47%) and 3 (46%) were 13 and 14 years of age respectively. This trend continued whereby in the higher forms 4 (53%) and 5 (85%) most students were 15, and 16 years and over respectively. In the state-assisted institutions the significant majority (76%) of form 1 students was 12 years and under, compared to 45% and 35% in the state and private secondary schools respectively.



Source: Table 57

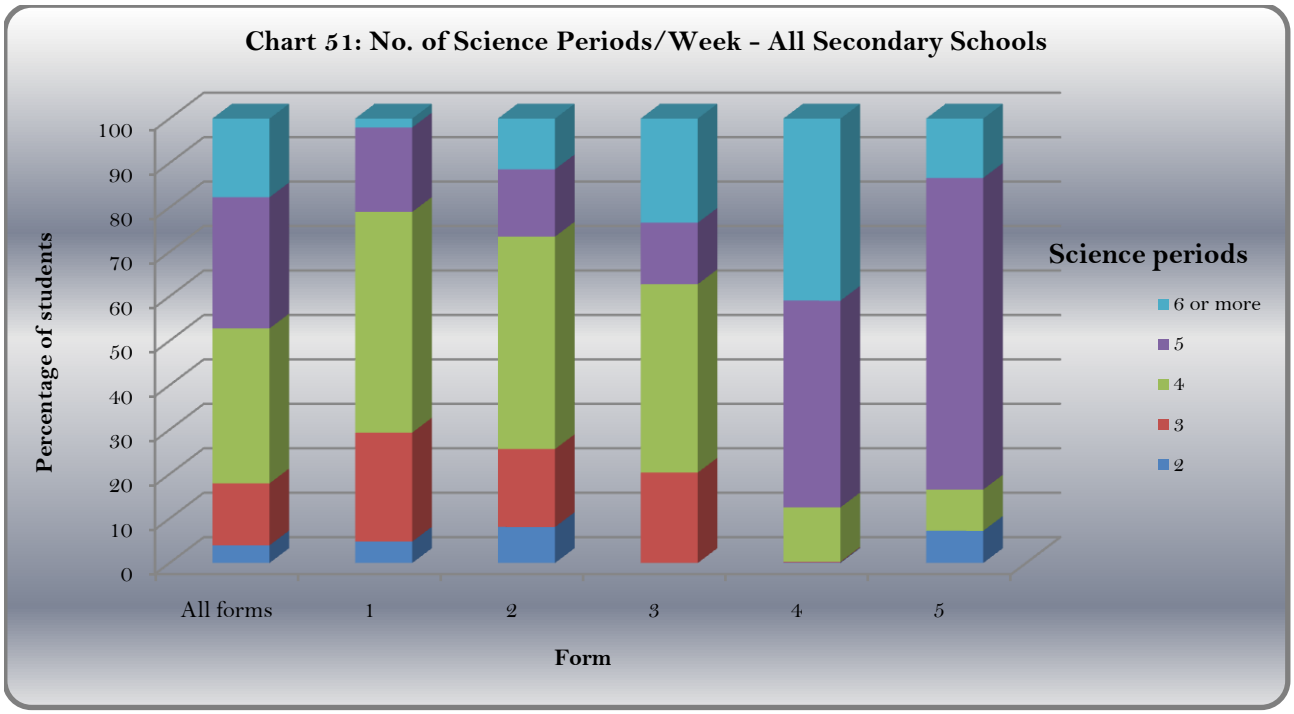
Table 58: Percentage of Students by Type of Secondary School and Form within Age

Type of secondary school	Form	Age (years)					
		Total	12 and under	13	14	15	16 and over
		percentage of students					
		(1)	(2)	(3)	(4)	(5)	(6)
All schools	All forms	100	100	100	100	100	100
	Form 1	25	92	40	14	4	1
	Form 2	22	8	52	37	13	0
	Form 3	19	0	8	43	26	12
	Form 4	21	0	0	6	49	38
	Form 5	13	0	0	0	8	49
Government	All forms	100	100	100	100	100	100
	Form 1	24	91	44	16	4	0
	Form 2	24	9	46	41	20	0
	Form 3	22	0	10	39	28	19
	Form 4	18	0	0	4	41	35
	Form 5	11	0	0	0	7	46
Government-assisted	All forms	100	100	100	100	100	100
	Form 1	22	93	24	4	0	0
	Form 2	20	7	69	27	3	0
	Form 3	18	0	7	61	22	7
	Form 4	26	0	0	9	65	43
	Form 5	14	0	0	0	10	50
Private	All forms	100	100	100	100	100	100
	Form 1	38	91	64	26	19	4
	Form 2	20	9	35	42	12	0
	Form 3	11	0	1	25	33	4
	Form 4	14	0	0	7	23	35
	Form 5	18	0	0	0	12	58

Table 59: No. of Science Periods/Week by Type of Secondary School and Form

Type of secondary school	Form	No. of science periods/week - percentage of students					
		Total	2	3	4	5	6 or more periods
		(1)	(2)	(3)	(4)	(5)	(6)
All schools	All forms	100	4	14	35	30	18
	Form 1	100	5	25	50	19	2
	Form 2	100	8	18	48	15	11
	Form 3	100	0	20	42	14	23
	Form 4	100	0	0	12	47	41
	Form 5	100	7	0	9	70	13
Government	All forms	100	3	14	39	23	20
	Form 1	100	6	28	51	15	0
	Form 2	100	7	6	63	20	5
	Form 3	100	0	28	42	5	25
	Form 4	100	0	0	10	33	58
	Form 5	100	0	0	5	65	30
Government-assisted	All forms	100	3	10	25	45	18
	Form 1	100	0	20	44	37	0
	Form 2	100	13	26	22	12	27
	Form 3	100	0	0	44	30	26
	Form 4	100	0	0	11	58	31
	Form 5	100	0	0	0	100	0
Private	All forms	100	12	25	47	12	4
	Form 1	100	9	23	57	0	11
	Form 2	100	0	55	45	0	0
	Form 3	100	0	52	36	12	0
	Form 4	100	0	2	37	61	0
	Form 5	100	44	0	44	11	0

Overall, the largest proportion (35%) of the students who responded to the survey reported a frequency of 4 science periods each week while 30% indicated 5 periods, mainly in form 5. The majority of students in government (39%) and private (47%) secondary schools had 4 science periods each week while 45% in government-assisted schools stated 5 periods. Generally, students in forms 4 and 5 reported 5 or more science periods each week.



Source: Table 59

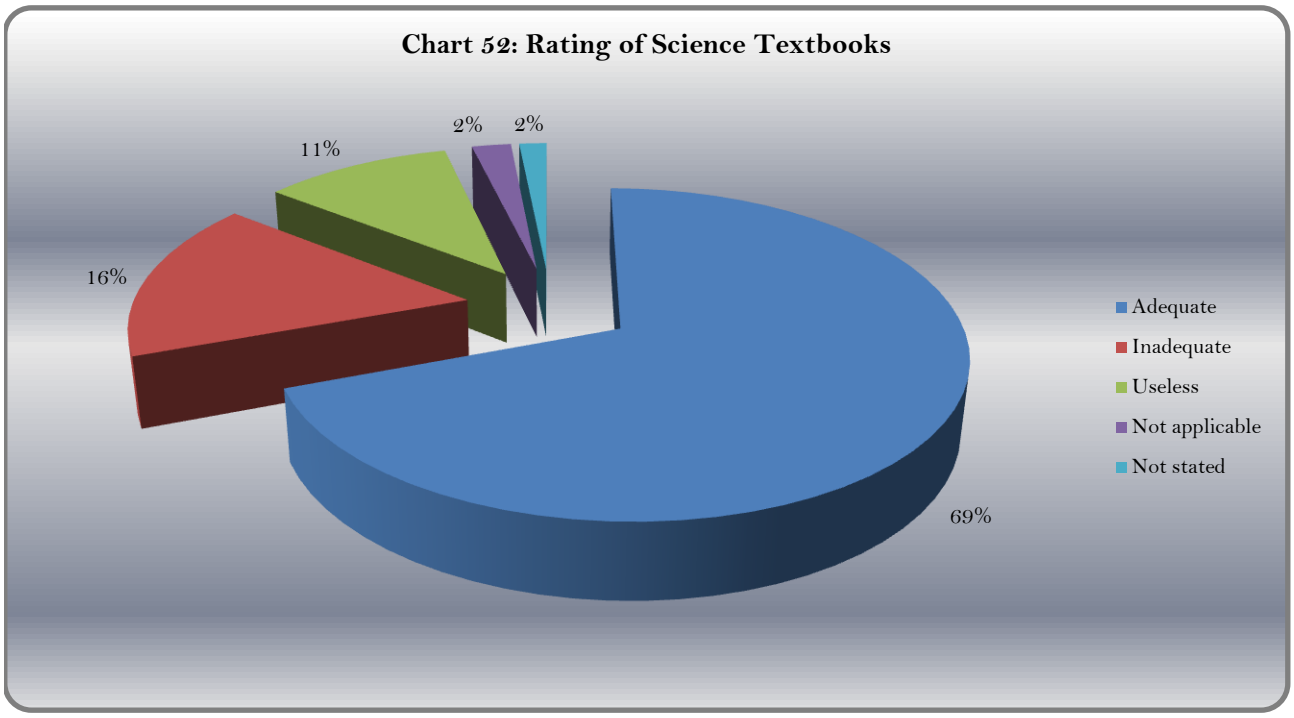
Table 60: Percentage of Students by Science Textbooks Used and Form

Name of textbook	Form - percentage of students					
	Total	Form 1	Form 2	Form 3	Form 4	Form 5
	(1)	(2)	(3)	(4)	(5)	(6)
Total	100	100	100	100	100	100
New Lower Secondary Science Book 1 - Hoong & Leng	21	83	0	0	0	0
New Lower Secondary Science Book 2 - Hoong & Leng	19	0	77	10	0	0
Caribbean Interactive Science Book 1 - Leng & Cazabon	2	8	0	0	0	0
Caribbean Interactive Science Book 2 - Leng & Cazabon	3	0	12	0	0	0
Caribbean Interactive Science Book 3 - Leng & Cazabon	12	0	0	64	0	0
Integrated Science for T&T Book 2 - Atwaroo-Ali & R. Maharaj	1	0	3	0	0	0
Hodder Science A&B - Helsop, Brodie & Williams	3	6	4	0	0	0
Longman Integrated Sciences For CXC - S. Potter & R. Oliver	4	0	0	0	10	17
CXC Integrated Science - Mitchelmore & Phillips	4	0	0	0	10	17
CXC Biology-Chinnery, Glasgow, Jones and Jones	3	0	0	0	15	1
Longman Biology for CXC - Bradfield & Potter	2	0	0	0	5	4
Biology for you - Gareth Williams	1	0	4	0	1	0
CXC Biology - L. Atwaroo-Ali	6	0	0	9	15	6
Biology: A Concise Revision Course for CXC - A. Tindale	1	0	0	0	0	8
Chemistry For You - Lawrie Ryan	0	0	0	2	0	0
Chemistry for CXC - Clark and Oliver	2	0	0	4	5	4
Chemistry: A Concise Revision Course for CxC - A. Tindale	1	0	0	0	0	7
Longman GCSE Chemistry - Jim Clark	1	0	0	0	0	6
Chemistry for CSEC - T. Chung & M. Taylor	1	0	0	0	3	0
Chemistry Explained (A CXC Course) - Joanne Nazir	3	0	0	3	7	10
Chemistry for CSEC - Nelson Thomas	1	0	0	0	4	0
Longman Physics for CXC - B. Jackson & P. Whiteley	2	0	0	0	9	1
Physics for You - Keith Johnson	1	0	0	0	3	0
Heinemann Physics for CXC - N. Lambert & N. Lewis	4	0	0	0	10	15
GCSE Physics (4th Edition) - T. Duncan & H. Kennett	1	0	0	4	0	0
None	2	2	0	3	3	4

Table 60 shows the distribution of science textbooks used in the public and private secondary schools. Most students in forms 1 (83%) and 2 (77%) used the New Lower Secondary Science Books 1 and 2 respectively. Caribbean Interactive Science Book 3 (64%) was the most popular textbook amongst form 3 students. The survey results indicate that students in the higher forms 4 and 5, however, used a variety of science textbooks.

Table 61: Percentage of Students by Rating of Science Textbooks

Name of textbook	Rating of textbook					
	Total	Ade-quate	Inade-quate	Useless	Not appli-cable	Not stated
	(1)	(2)	(3)	(4)	(5)	(6)
Total	100	69	16	11	2	2
New Lower Secondary Science Book 1 - Hoong & Leng	100	77	13	7	0	2
New Lower Secondary Science Book 2 - Hoong & Leng	100	60	17	21	0	2
Caribbean Interactive Science Book 1 - Leng & Cazabon	100	90	9	0	0	1
Caribbean Interactive Science Book 2 - Leng & Cazabon	100	58	20	23	0	0
Caribbean Interactive Science Book 3 - Leng & Cazabon	100	63	25	10	0	1
Integrated Science for T&T Book 2 - Atwaroo-Ali & R. Maharaj	100	71	24	5	0	0
Hodder Science A&B - Helsop, Brodie & Williams	100	40	10	48	0	1
CXC Integrated Science - Mitchelmore & Phillips	100	76	17	7	0	1
Longman Integrated Sciences For CXC - S. Potter & R. Oliver	100	71	23	3	0	3
CXC Biology-Chinnery, Glasgow, Jones and Jones	100	84	12	3	0	2
Longman Biology for CXC - Bradfield & Potter	100	81	13	4	0	2
Biology for you - Gareth Williams	100	82	3	11	0	5
CXC Biology - L. Atwaroo-Ali	100	82	13	4	0	1
Biology: A Concise Revision Course for CXC - A. Tindale	100	89	9	3	0	0
Chemistry for CXC - Clark and Oliver	100	77	16	7	0	0
Chemistry for CSEC - Nelson Thomas	100	88	8	4	0	0
Chemistry For You - Lawrie Ryan	100	91	0	9	0	0
Chemistry Explained (A CXC Course) - Joanne Nazir	100	84	11	5	0	0
Chemistry: A Concise Revision Course for CxC - A. Tindale	100	97	3	0	0	0
Chemistry for CSEC - T. Chung & M. Taylor	100	95	5	0	0	0
Longman GCSE Chemistry - Jim Clark	100	71	14	14	0	0
Physics for You - Keith Johnson	100	95	5	0	0	0
Heinemann Physics for CXC - N. Lambert & N. Lewis	100	65	28	7	0	1
GCSE Physics (4th Edition) - T. Duncan & H. Kennett	100	63	26	0	0	11
Longman Physics for CXC - B. Jackson & P. Whiteley	100	63	28	8	0	0

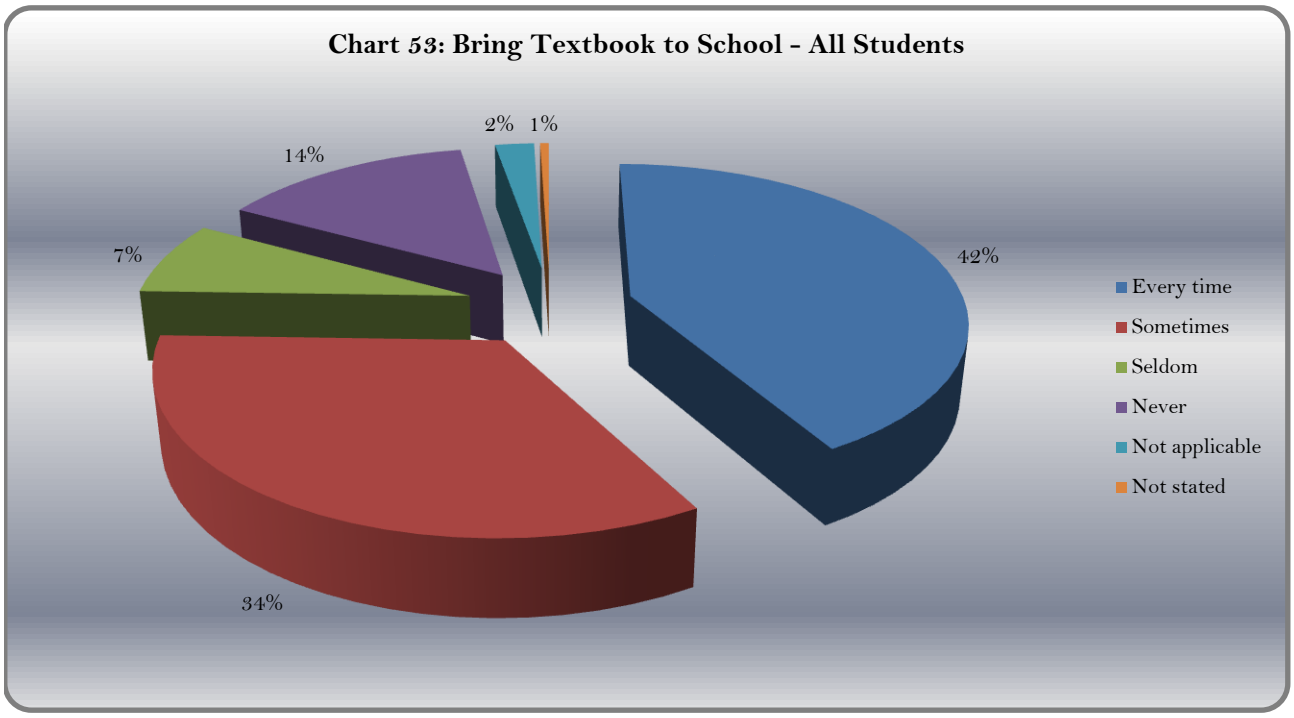


Source: Table 61

Table 62: Bring Textbook to School by Type of School and Form

Type of secondary school	Form	Bring textbook to school - percentage of students						
		Total	Every time	Sometimes	Seldom	Never	Not applicable	Not stated
		(1)	(2)	(3)	(4)	(5)	(6)	(7)
All schools	All forms	100	42	34	7	14	2	0
	Form 1	100	53	31	5	8	2	1
	Form 2	100	34	34	7	24	0	1
	Form 3	100	26	34	13	23	3	1
	Form 4	100	49	35	5	7	3	0
	Form 5	100	44	34	10	8	4	0
Government	All forms	100	31	40	7	20	2	1
	Form 1	100	37	41	7	14	0	1
	Form 2	100	25	41	5	28	0	1
	Form 3	100	17	34	12	31	5	1
	Form 4	100	40	41	4	8	6	0
	Form 5	100	43	41	5	12	0	0
Government-assisted	All forms	100	56	28	8	7	1	0
	Form 1	100	74	21	3	2	0	0
	Form 2	100	52	25	9	14	0	0
	Form 3	100	41	36	13	10	0	0
	Form 4	100	61	27	6	6	0	1
	Form 5	100	40	32	15	3	10	0
Private	All forms	100	49	26	9	12	4	0
	Form 1	100	62	23	2	2	11	1
	Form 2	100	29	22	14	35	0	0
	Form 3	100	38	29	26	7	0	0
	Form 4	100	37	47	5	11	0	0
	Form 5	100	58	21	11	10	0	0

The data reveal that two-fifths (42%) of the students brought their science textbooks to school, 'every time,' while one-third (34%) stated, 'sometimes'. Approximately a quarter of the students in forms 2 (24%) and 3 (23%) never brought their science textbooks to school. By type of school, the survey results show that the majority of the students in government-assisted (56%) and private (49%) schools brought their textbooks to school, 'every time', compared to one-third (31%) in government schools.

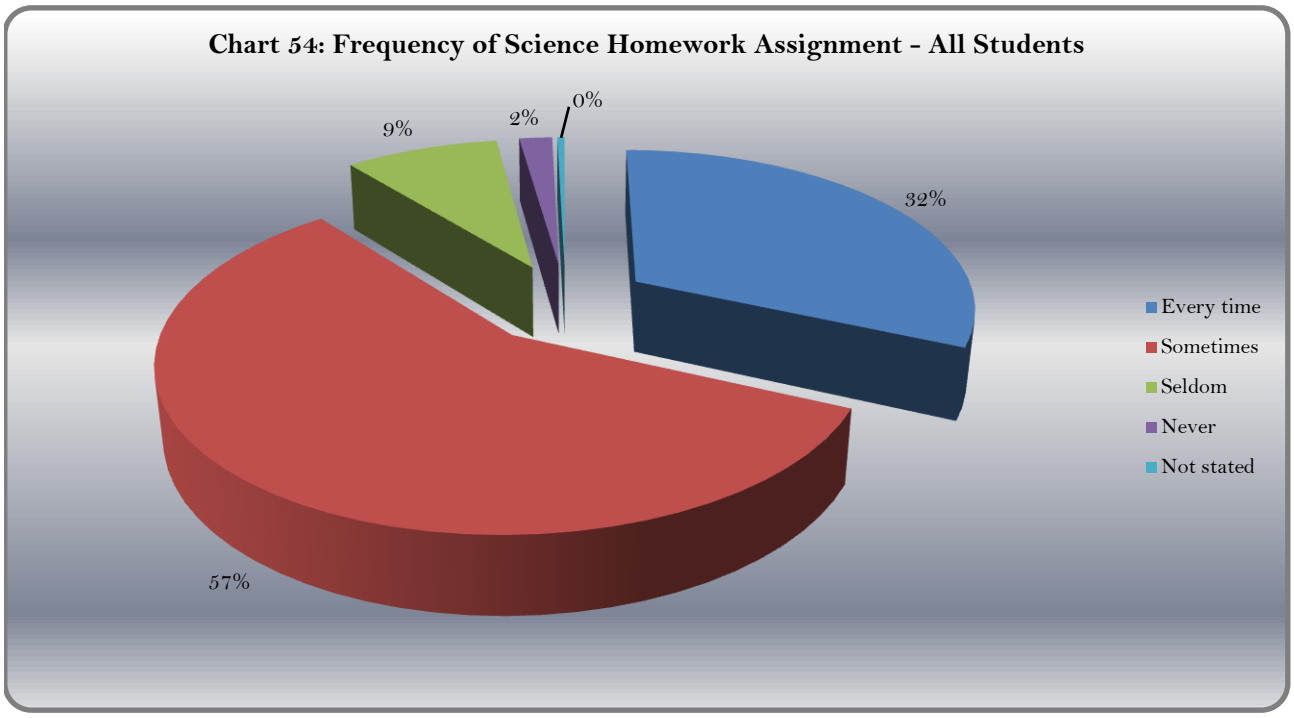


Source: Table 62

Table 63: Frequency of Science Homework Assigned by Type of Secondary School and Form

Type of secondary school	Form	Science homework assignment - percentage of students					
		Total	Every time	Sometimes	Seldom	Never	Not stated
		(1)	(2)	(3)	(4)	(5)	(6)
All schools	All forms	100	32	57	9	2	0
	Form 1	100	31	62	6	1	0
	Form 2	100	25	63	10	1	1
	Form 3	100	25	57	12	7	0
	Form 4	100	44	49	6	0	1
	Form 5	100	36	52	12	0	0
Government	All forms	100	29	59	9	3	1
	Form 1	100	31	59	8	1	0
	Form 2	100	21	66	10	2	1
	Form 3	100	24	58	10	8	0
	Form 4	100	36	55	8	0	1
	Form 5	100	43	51	5	0	1
Government-assisted	All forms	100	37	54	9	1	0
	Form 1	100	32	66	3	0	0
	Form 2	100	34	59	6	0	1
	Form 3	100	28	54	13	5	0
	Form 4	100	56	39	4	0	0
	Form 5	100	22	55	23	0	0
Private	All forms	100	28	62	8	2	0
	Form 1	100	30	63	5	1	0
	Form 2	100	17	62	19	3	0
	Form 3	100	12	69	17	2	0
	Form 4	100	26	70	0	2	2
	Form 5	100	47	50	3	0	0

Over a half (57%) of the responding sample of students indicated that teachers assigned science homework, 'sometimes,' while one-third (32%) stated,' every time'. A higher percentage (37%) of students in state-assisted schools, especially in form 4 (56%), reported homework, 'every time,' compared to 29% and 28% in state and private institutions respectively.

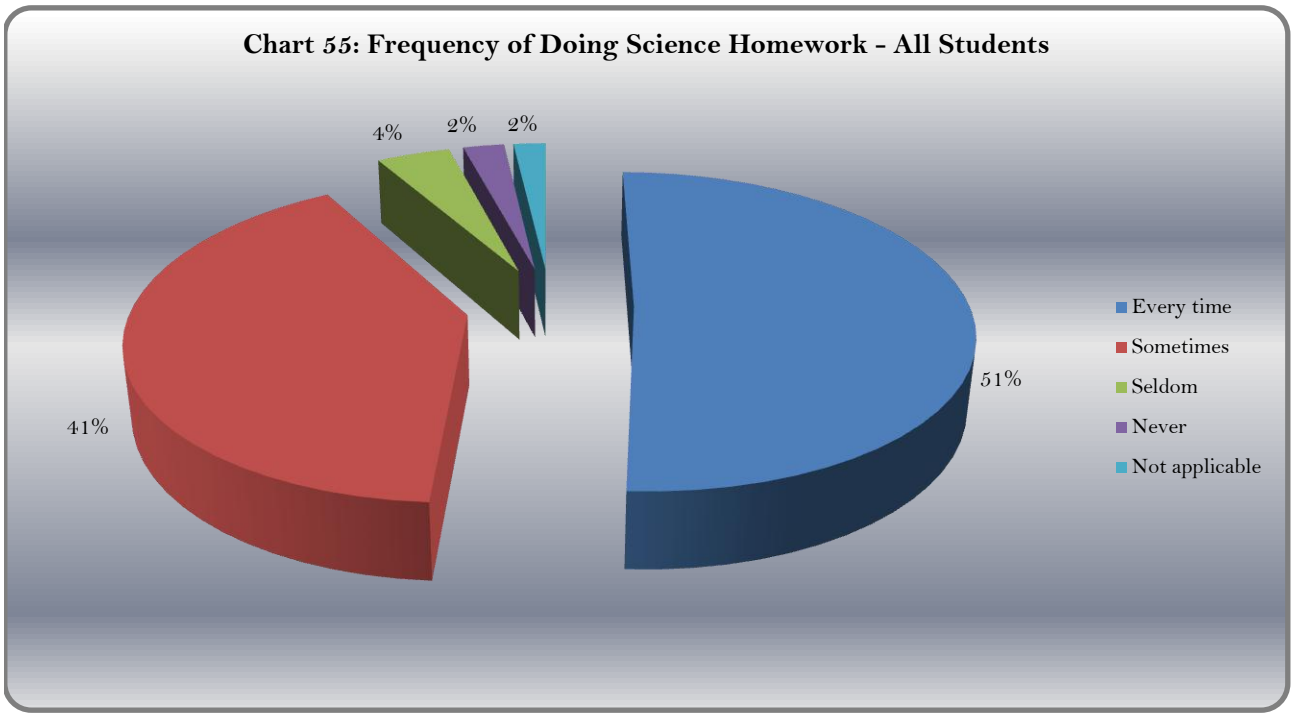


Source: Table 63

Table 64: Frequency of Doing Science Homework by Type of Secondary School and Form

Type of secondary school	Form	Do science homework - percentage of students					
		Total	Every time	Sometimes	Seldom	Never	Not applicable
		(1)	(2)	(3)	(4)	(5)	(6)
All schools	All forms	100	51	41	4	2	2
	Form 1	100	60	35	2	1	1
	Form 2	100	53	39	3	3	1
	Form 3	100	43	42	6	3	7
	Form 4	100	48	44	5	3	0
	Form 5	100	45	47	5	2	0
Government	All forms	100	45	45	4	3	3
	Form 1	100	51	42	3	3	1
	Form 2	100	48	44	3	4	2
	Form 3	100	37	45	7	2	8
	Form 4	100	46	47	4	3	0
	Form 5	100	43	50	6	1	0
Government-assisted	All forms	100	59	35	4	2	1
	Form 1	100	76	23	2	0	0
	Form 2	100	64	31	2	2	0
	Form 3	100	54	33	5	3	5
	Form 4	100	51	41	5	2	0
	Form 5	100	46	47	5	3	0
Private	All forms	100	52	40	5	3	2
	Form 1	100	60	38	1	0	1
	Form 2	100	54	33	9	1	3
	Form 3	100	33	52	10	2	2
	Form 4	100	40	46	4	9	2
	Form 5	100	53	39	4	4	0

The response data reveal that 51% of students did their science homework, 'every time,' and 41%, 'sometimes'. When analysed by type of school the data show that three-fifths (59%) of the students in government-assisted secondary schools did their homework, 'every time,' compared to 52% and 45% in private and government schools respectively.



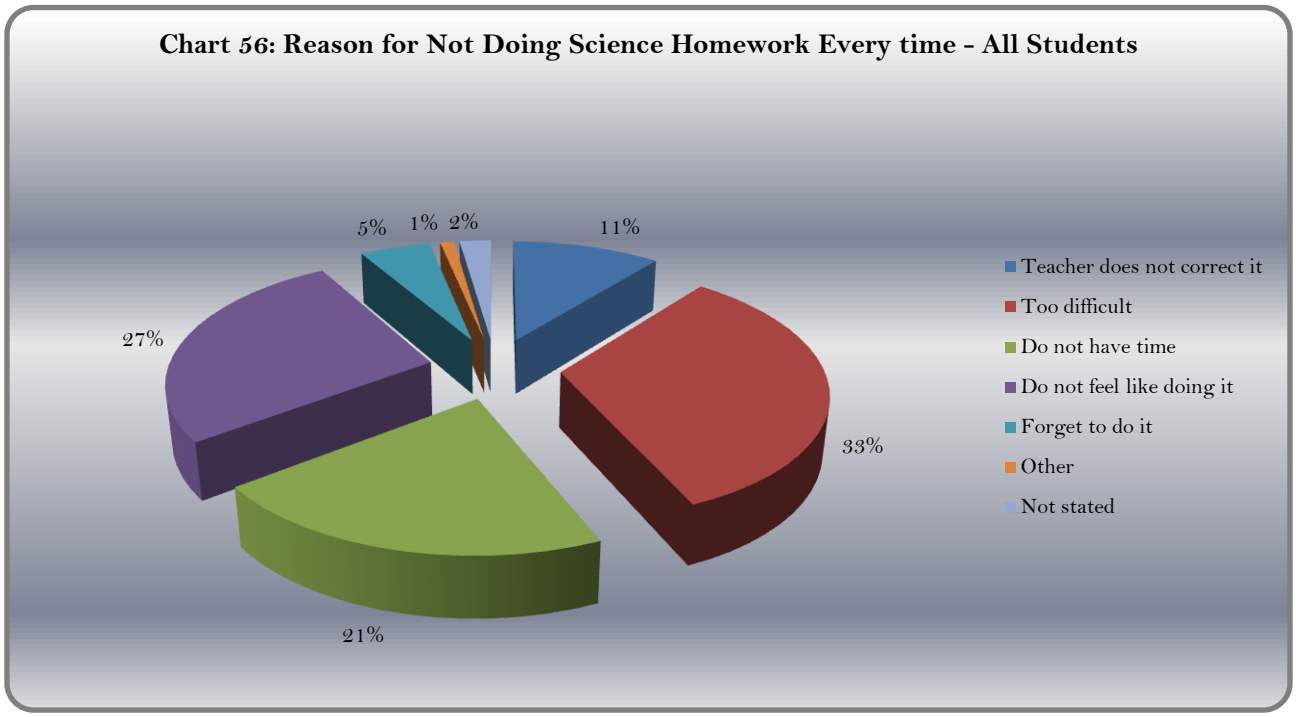
Source: Table 64

Table 65: Reasons for Not Doing Science Homework Every time by Type of Secondary School and Form

Type of secondary school	Form	Reason - percentage of students							
		Total	Teacher does not correct it	Too difficult	Do not have time	Do not feel like doing it	Forget to do it	Other	Not stated
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
All schools	All forms	100	11	33	21	27	5	1	2
	Form 1	100	11	31	19	25	9	2	3
	Form 2	100	17	41	14	21	4	2	2
	Form 3	100	13	31	17	30	7	0	2
	Form 4	100	6	32	29	28	3	0	2
	Form 5	100	6	27	27	33	3	2	3
Government	All forms	100	12	35	18	27	5	1	2
	Form 1	100	11	33	18	24	7	2	4
	Form 2	100	20	44	13	19	2	0	2
	Form 3	100	14	32	15	32	6	0	2
	Form 4	100	4	33	26	31	5	0	1
	Form 5	100	7	27	23	35	3	3	2
Government-assisted	All forms	100	9	27	28	27	7	0	
	Form 1	100	8	24	26	23	17	0	3
	Form 2	100	15	33	18	22	7	2	2
	Form 3	100	10	30	19	28	9	2	1
	Form 4	100	7	26	33	30	2	0	2
	Form 5	100	4	21	36	31	4	0	3
Private	All forms	100	10	40	17	24	4	2	3
	Form 1	100	12	32	15	32	5	3	2
	Form 2	100	6	40	9	31	9	5	1
	Form 3	100	19	26	33	19	4	0	0
	Form 4	100	9	64	18	3	0	0	6
	Form 5	100	6	41	18	29	0	0	6

The table above shows the reasons given by students who reported not doing their science homework every time. One-third (33%) of the students indicated that the science homework was too difficult while 27% did not feel like doing it and 21% did not have time. By type of school, difficulty was observed as the main reason for not doing homework in government (35%) and private (40%) secondary schools, followed by, 'did not feel like doing it'. In government-assisted schools a similar percentage of students reported, 'too difficult,' (27%), 'do not have time,' (28%) and, 'do not feel like doing it' (27%). A further review of the data by form reveals that difficulty was identified as the key reason for not doing science homework every time in all the forms except form 5 where one-third (33%) stated, 'do not feel like doing it'.

Chart 56: Reason for Not Doing Science Homework Every time - All Students

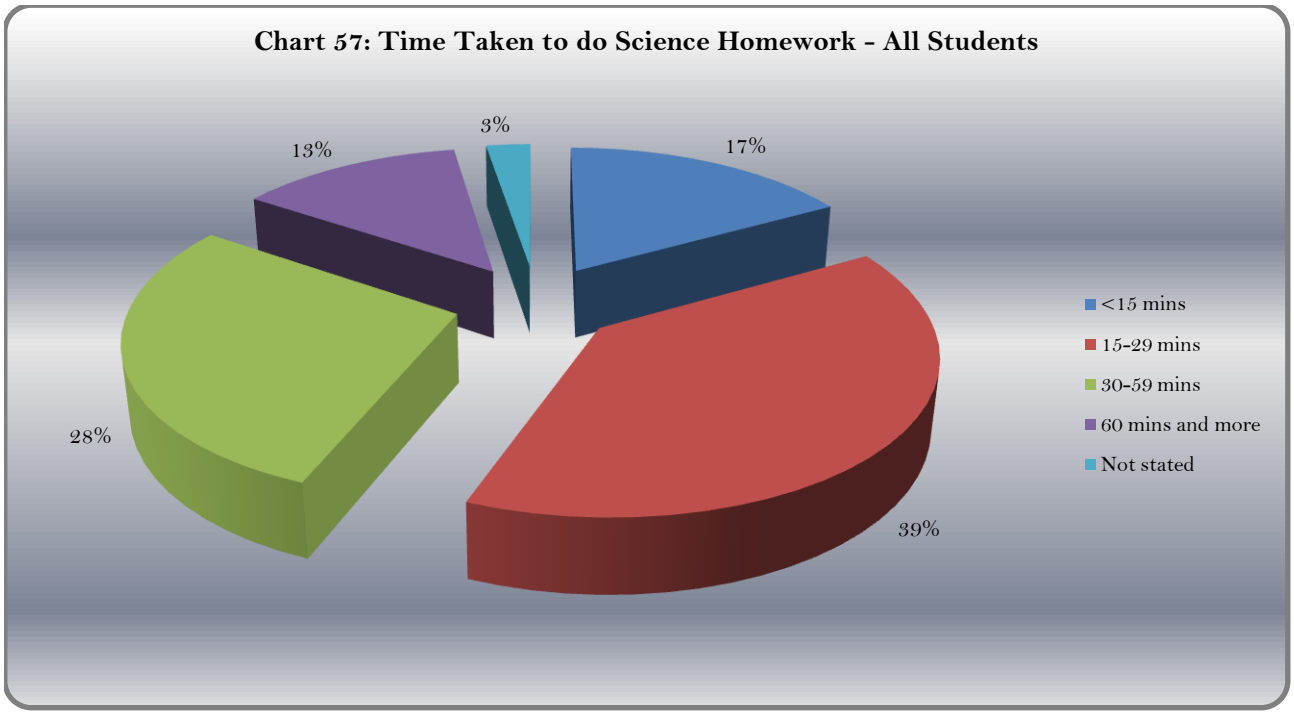


Source: Table 65

Table 66: Time Taken to do Science Homework by Type of Secondary School and Form

Type of secondary school	Form	Time taken - percentage of students					
		Total	<15 mins	15-29 mins	30-59 mins	60 mins and more	Not stated
		(1)	(2)	(3)	(4)	(5)	(6)
All schools	All forms	100	17	39	28	13	3
	Form 1	100	24	43	22	10	2
	Form 2	100	20	38	25	14	2
	Form 3	100	19	39	26	12	3
	Form 4	100	9	36	35	16	4
	Form 5	100	7	37	39	15	2
Government	All forms	100	20	35	28	14	2
	Form 1	100	31	38	21	7	3
	Form 2	100	23	33	23	18	3
	Form 3	100	19	37	28	15	1
	Form 4	100	11	31	38	15	4
	Form 5	100	7	35	41	16	1
Government-assisted	All forms	100	14	44	28	11	3
	Form 1	100	17	49	22	11	0
	Form 2	100	18	47	27	7	1
	Form 3	100	22	44	23	7	4
	Form 4	100	6	39	35	15	4
	Form 5	100	9	42	35	10	3
Private	All forms	100	11	41	28	16	3
	Form 1	100	15	48	22	13	1
	Form 2	100	12	39	32	14	3
	Form 3	100	10	32	34	12	12
	Form 4	100	7	48	20	20	5
	Form 5	100	6	31	40	22	1

Table 66 shows the time taken by students to do their science homework. A relatively large proportion (39%) of students took 15-29 minutes and 28%, 30-59 minutes. One-fifth (20%) of students in state schools took less than 15 minutes to do their homework. A review of the data by form shows that students in the higher forms spent more time doing homework than their counterparts in the lower forms. Two-fifths (39%) of the students in form 5 and 35% in form 4 reported 30-59 minutes of homework.

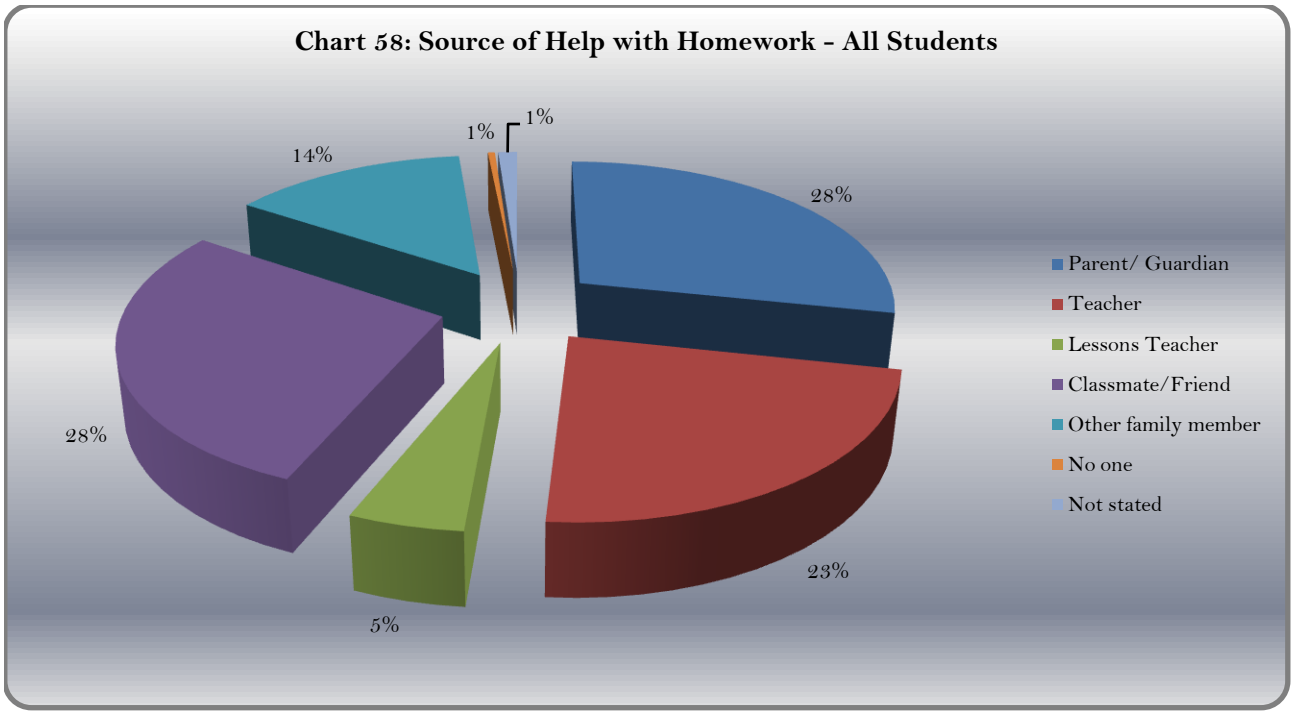


Source: Table 66

Table 67: Seeking Help with Science Homework by Type of Secondary School and Form

Type of secondary school	Form	Source of help with homework - percentage of students							
		Total	Parent/ Guardian	Teacher	Lessons Teacher	Classmate/ Friend	Other family member	No one	Not stated
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
All schools	All forms	100	28	23	5	28	14	0	1
	Form 1	100	50	18	2	12	16	0	1
	Form 2	100	35	20	2	24	16	1	2
	Form 3	100	23	26	5	34	11	1	0
	Form 4	100	13	27	9	36	14	0	2
	Form 5	100	8	28	9	45	10	0	0
Government	All forms	100	29	25	5	24	15	0	1
	Form 1	100	48	18	4	11	17	0	2
	Form 2	100	35	25	3	19	16	1	2
	Form 3	100	26	26	5	31	12	0	1
	Form 4	100	14	29	9	30	16	1	2
	Form 5	100	9	28	6	42	13	0	1
Government-assisted	All forms	100	26	22	5	33	12	0	
	Form 1	100	54	18	0	14	13	0	0
	Form 2	100	36	16	1	32	12	0	3
	Form 3	100	19	27	4	38	10	2	0
	Form 4	100	11	25	9	42	13	0	1
	Form 5	100	8	27	12	45	8	1	0
Private	All forms	100	29	19	4	30	17	1	1
	Form 1	100	46	17	2	14	20	1	1
	Form 2	100	34	8	1	25	32	0	0
	Form 3	100	17	22	0	46	12	2	0
	Form 4	100	18	21	11	39	7	0	4
	Form 5	100	4	29	8	53	6	0	0

In seeking help with science homework, students identified their parents or guardians (28%), classmates or friends (28%) and teachers (23%) as their main sources of assistance. Most form 1 (50%) students sought help with their homework from their parents or guardians, and from classmates or friends in the case of form 5 (45%) students.

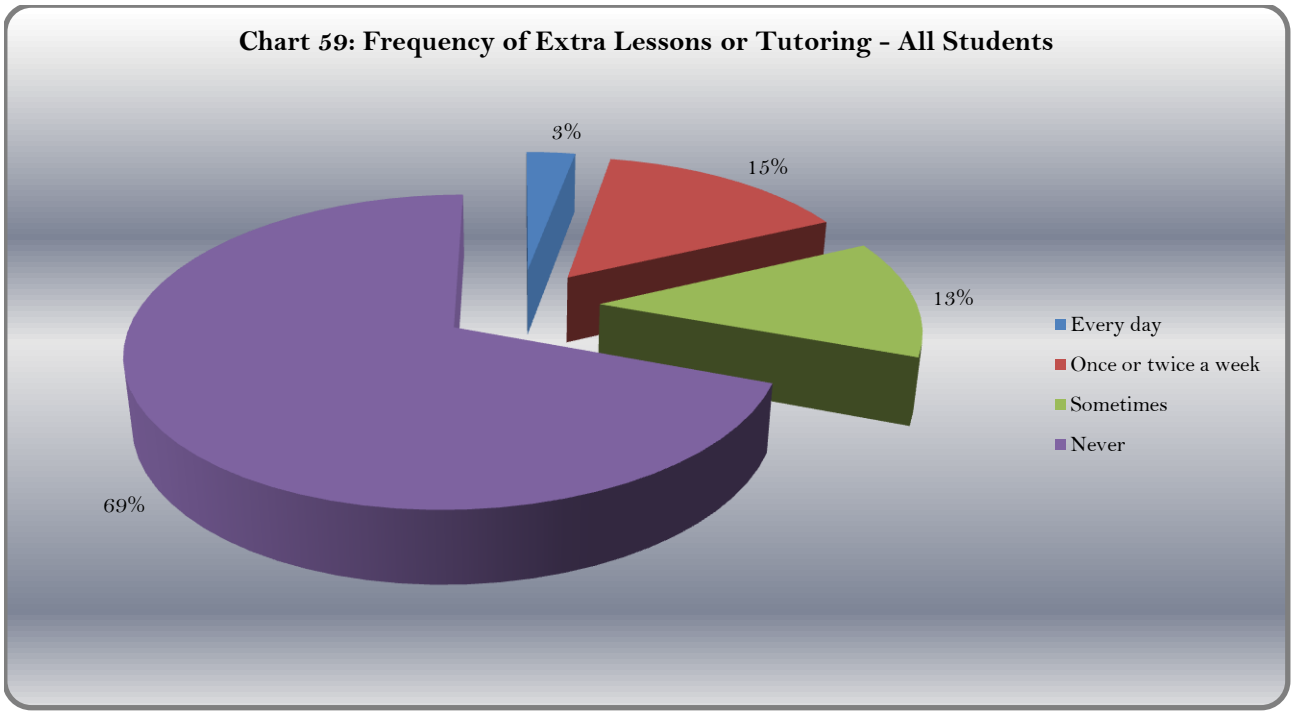


Source: Table 67

Table 68: Extra Lessons or Tutoring by Type of Secondary School and Form

Type of secondary school	Form	Frequency of extra lessons or tutoring - percentage of students				
		Total	Every day	Once or twice a week	Sometimes	Never
		(1)	(2)	(3)	(4)	(5)
All schools	All forms	100	3	15	13	69
	Form 1	100	2	5	9	85
	Form 2	100	1	5	14	80
	Form 3	100	2	11	13	74
	Form 4	100	5	30	12	53
	Form 5	100	6	35	19	41
Government	All forms	100	3	11	13	73
	Form 1	100	3	5	8	84
	Form 2	100	2	5	17	76
	Form 3	100	2	11	13	74
	Form 4	100	3	22	14	61
	Form 5	100	3	23	17	57
Government-assisted	All forms	100	3	20	12	65
	Form 1	100	0	2	9	89
	Form 2	100	0	5	12	83
	Form 3	100	3	11	12	74
	Form 4	100	6	40	10	45
	Form 5	100	8	43	21	28
Private	All forms	100	4	18	10	69
	Form 1	100	2	8	9	81
	Form 2	100	3	5	5	87
	Form 3	100	0	12	19	69
	Form 4	100	5	26	7	61
	Form 5	100	8	47	15	29

A substantial percentage (69%) of the responding sample of secondary school students did not take extra lessons or tutoring. By type of school a similar proportion of students in government-assisted (35%), government (27%) and private (32%) schools received extra lessons or tutoring. Further examination of the data by form indicates that a relatively larger proportion of students in the higher forms accessed extra lessons or tutoring more frequently than their counterparts in the lower forms. Approximately one-third of form 4 (30%) and form 5 (35%) students received extra lessons or tutoring, 'once or twice a week'.

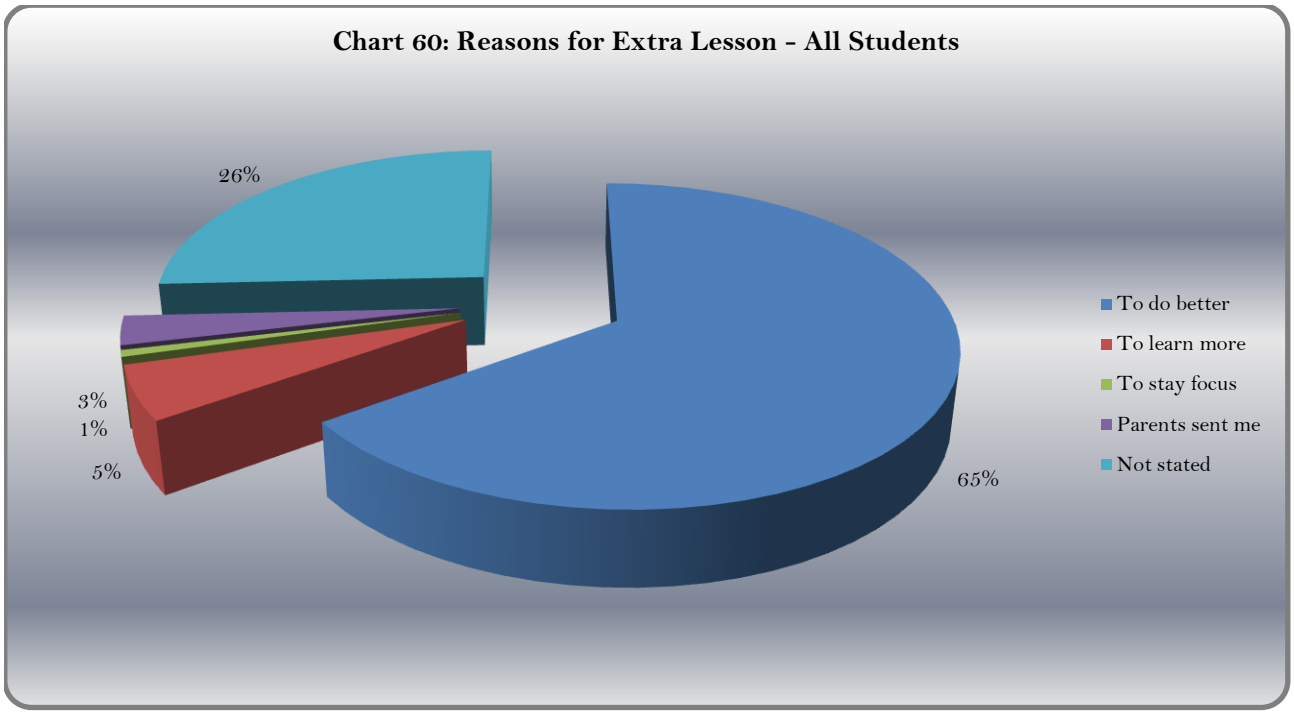


Source: Table 68

Table 69: Reasons for Taking Extra Lessons by Type of Secondary School and Form

Type of secondary school	Form	Reason for extra lesson - percentage of students					
		Total	To do better	To learn more	To stay focus	Parents sent me	Not stated
		(1)	(2)	(3)	(4)	(5)	(6)
All schools	All forms	100	65	5	1	3	26
	Form 1	100	47	5	0	5	44
	Form 2	100	45	5	0	3	46
	Form 3	100	60	8	2	4	26
	Form 4	100	76	5	1	2	16
	Form 5	100	77	4	0	3	17
Government	All forms	100	57	6	1	3	33
	Form 1	100	42	8	0	3	47
	Form 2	100	42	5	0	4	50
	Form 3	100	58	9	2	3	28
	Form 4	100	67	5	2	2	25
	Form 5	100	72	5	0	4	20
Government-assisted	All forms	100	76	5	1	3	15
	Form 1	100	60	3	0	7	30
	Form 2	100	54	7	0	2	37
	Form 3	100	64	9	2	7	18
	Form 4	100	82	6	1	2	10
	Form 5	100	83	2	0	2	12
Private	All forms	100	62	4	0	3	31
	Form 1	100	45	0	0	7	48
	Form 2	100	50	0	0	0	50
	Form 3	100	54	0	0	0	46
	Form 4	100	77	5	0	5	14
	Form 5	100	69	8	0	2	22

Overall, two-thirds (65%) of the students, especially in forms 4 (76%) and 5 (77%), attended extra lessons, 'to do better', which was also seen as the desired outcome by a larger proportion of students in state-assisted secondary schools (76%) compared to state (57%) and private (62%) schools.

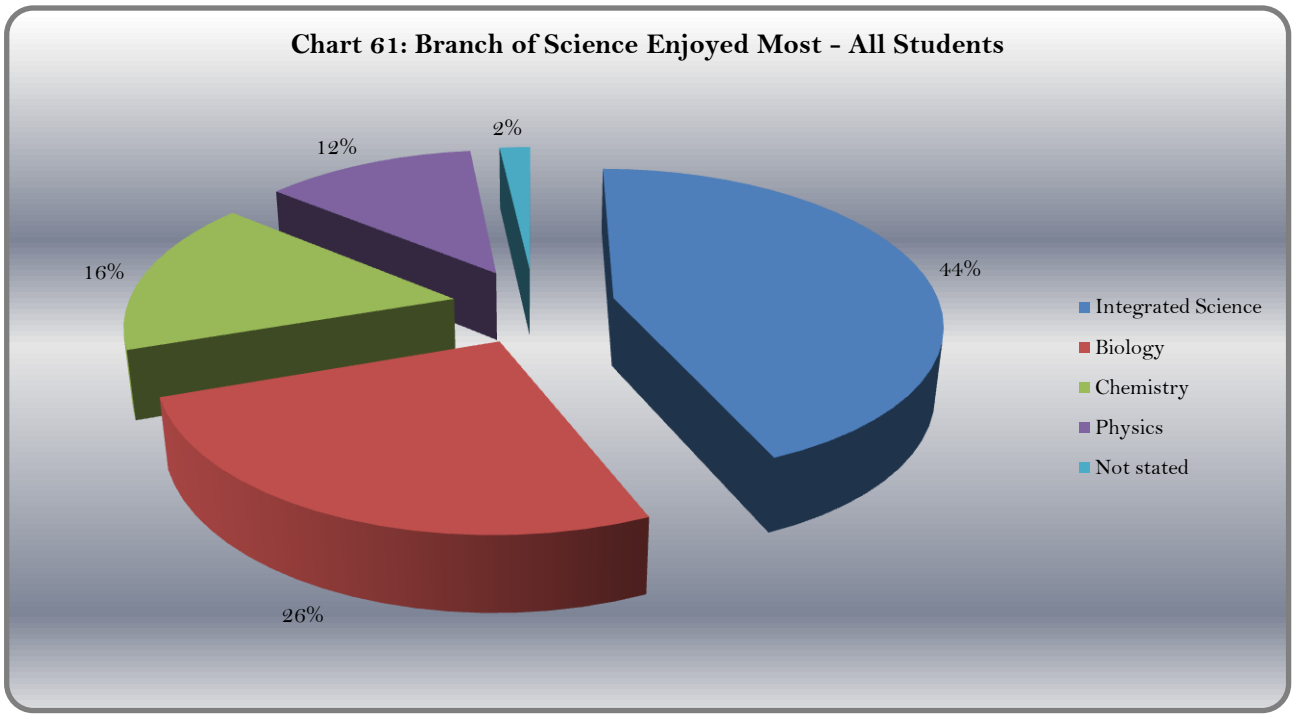


Source: Table 69

Table 70: Branch of Science Enjoyed Most by Form

Form	Branch of science - percentage of students					
	Total	Integrated Science	Biology	Chemistry	Physics	Not stated
	(1)	(2)	(3)	(4)	(5)	(6)
All forms	100	44	26	16	12	2
Form 1	100	64	12	15	7	2
Form 2	100	51	19	18	9	3
Form 3	100	40	27	15	16	2
Form 4	100	23	41	17	19	1
Form 5	100	29	42	15	13	1

As Integrated Science is taught in the lower forms, especially in the state and state-assisted institutions, most students in forms 1 to 3 enjoyed this combination of the biological and physical sciences. However, in pursuing studies in core sciences, the majority of students in forms 4 and 5 enjoyed Biology, followed by Chemistry and Physics to a lesser extent.

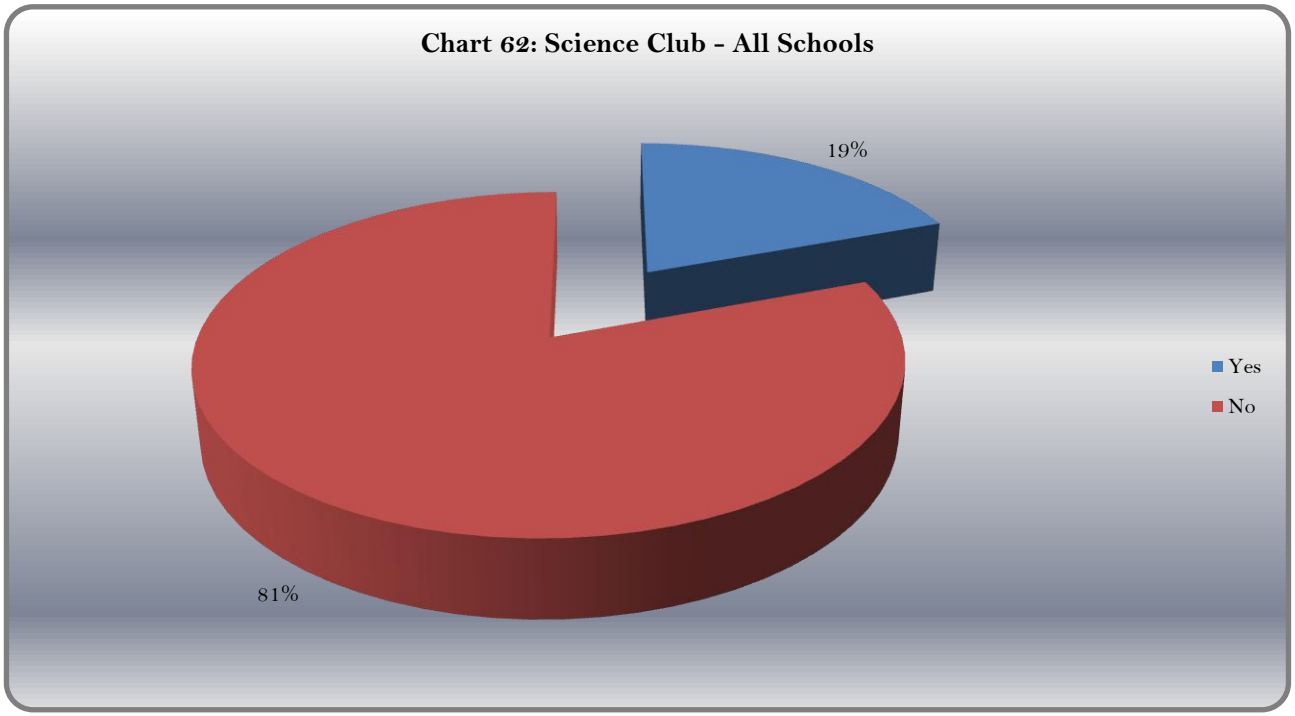


Source: Table 70

Table 71: Science Club by Type of Secondary School

Type of secondary school	School with science club - percentage of students		
	Total	Yes	No
	(1)	(2)	(3)
All schools	100	19	81
Government	100	12	88
Government-assisted	100	36	64
Private	100	0	100

Four-fifths (81%) of the students reported that their schools had no science club. By type of school, the state-assisted institutions had a higher percentage (36%) of science clubs compared to 19% in state schools and none in private schools.



Source: Table 71

Table 72: Membership in Science Club by Type of Secondary School

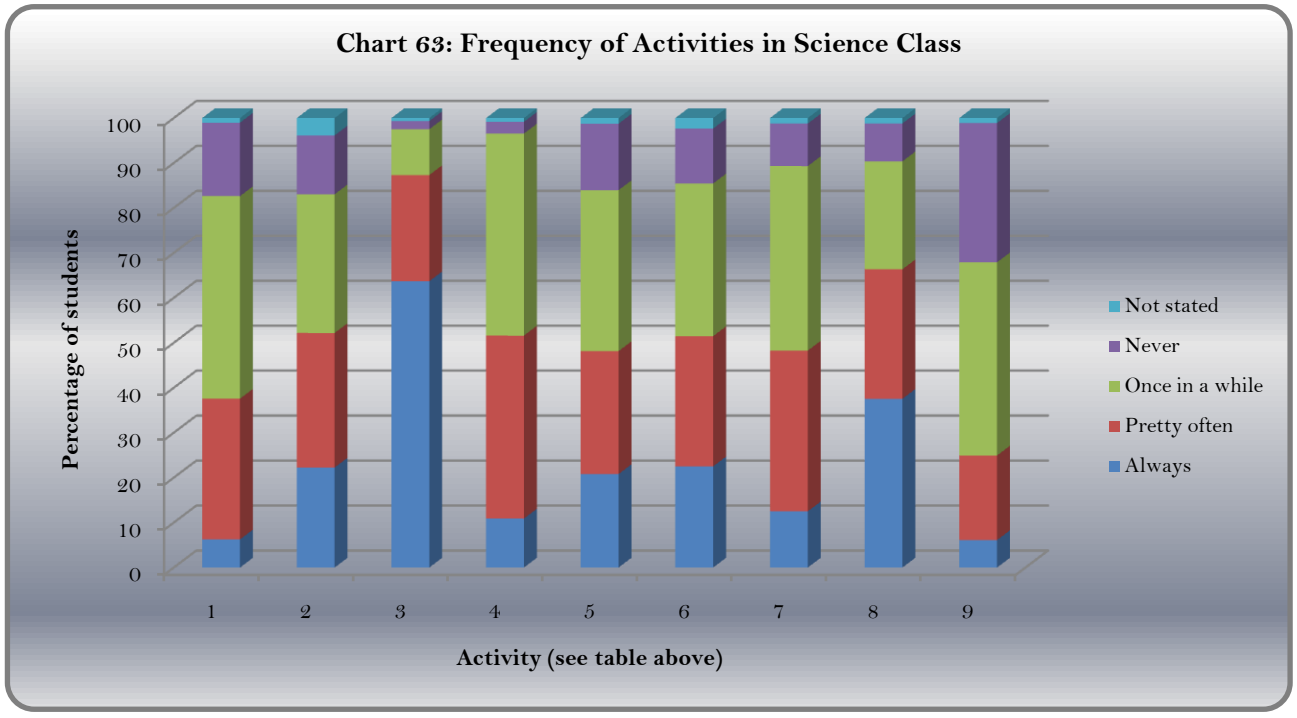
Type of secondary school	Member of school science club - percentage of students		
	Total	Yes	No
	(1)	(2)	(3)
Total	100	15	85
Government	100	18	82
Government-assisted	100	14	86
Private	0	0	0

Of the 19% of students who indicated that their schools had science clubs only 15% were members.

Table 73: Frequency of Activities in Science Class

Activity	Frequency - percentage of students					
	Total	Always	Pretty often	Once in a while	Never	Not stated
	(1)	(2)	(3)	(4)	(5)	(6)
1 Conduct experiments and investigations	100	6	31	45	16	1
2 Present and discuss findings	100	22	30	31	13	4
3 Copy notes from the board or teacher	100	64	24	10	2	1
4 Have a quiz or test	100	11	41	45	3	1
5 Work individually using textbooks	100	21	27	36	15	1
6 Relate science to everyday problems	100	23	29	34	12	2
7 Work in groups	100	13	36	41	9	1
8 Discuss completed homework	100	38	29	24	8	1
9 Students write on the board	100	6	19	43	31	1

Of the activities listed in the table above, students copied notes from the board or teacher (88%) and discussed completed homework (67%) most frequently in their science classes. Approximately a half of the students reported, 'always,' and, 'pretty often,' for the following activities: relate science to everyday problems (52%), present and discuss findings (52%), have a quiz or test (52%), work in groups (49%) and work individually using textbook (48%). Practicals, including the conduct of experiments and investigations (37%), were also undertaken quite frequently.

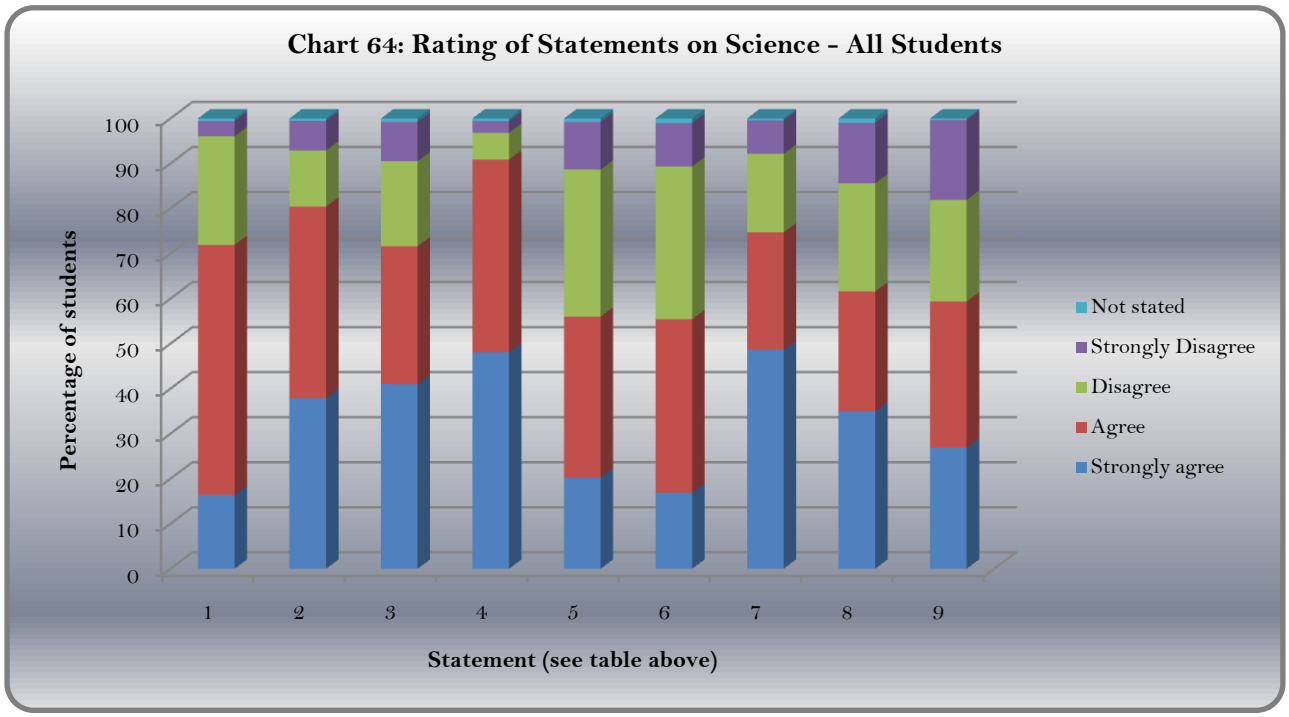


Source: Table 73

Table 74: Agreement with Statements about Science

Statement	Rating - percentage of students					
	Total	Strongly agree	Agree	Dis-agree	Strongly Disagree	Not stated
	(1)	(2)	(3)	(4)	(5)	(6)
1 I usually do well in science	100	16	56	24	3	1
2 I like science	100	38	43	12	7	1
3 I would like science much more if it were not so difficult	100	41	31	19	9	1
4 I think learning science will help me in my daily life	100	48	43	6	3	1
5 I would like to take more science in school	100	20	36	33	11	1
6 I need science to learn other school subjects	100	17	39	34	10	1
7 I need to do well in science to get the job I want	100	49	26	17	7	0
8 I would like a job that involved science	100	35	27	24	13	1
9 I need to do well in science to please my parents	100	27	32	23	18	0

A significant percentage of the students indicated that learning science will help them in their daily lives (91%) and that they liked science (81%). Approximately three-quarters agreed with the statements: 'I need to do well in science to get the job I want,' (75%) 'I would like science much more if it were not so difficult,' (72%) and 'I usually do well in science' (72%). The data also reveal a substantial level of agreement amongst students on the following statements: 'I would like a job that involved science,' (62%) 'I need to do well in science to please my parents,' (59%) 'I would like to take more science in school,' (56%) and, 'I need science to learn other school subjects,' (56%).

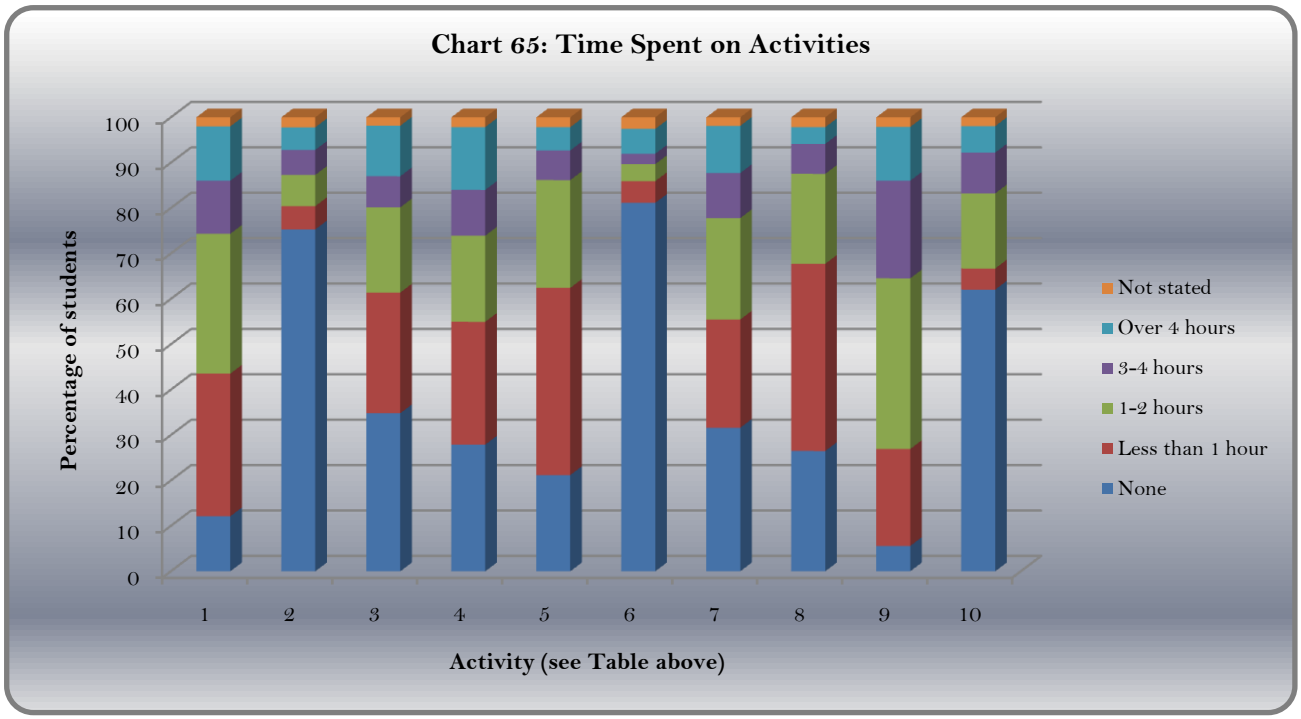


Source: Table 74

Table 75: Time Spent on Activities on a Normal School Day

Activity	Time spent - percentage of students						
	Total	None	Less than 1 hour	1-2 hours	3-4 hours	Over 4 hours	Not stated
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1 Watching television or videos	100	12	31	31	12	12	2
2 Going to the cinema	100	75	5	7	6	5	2
3 Playing computer games	100	35	27	19	7	11	2
4 Hanging out with friends	100	28	27	19	10	14	2
5 Doing jobs at home	100	21	41	24	7	5	2
6 Working at a paid job	100	81	5	4	2	5	3
7 Playing sports	100	32	24	22	10	10	2
8 Reading a book or magazine	100	27	41	20	7	4	2
9 Doing homework (all subjects)	100	6	21	38	21	12	2
10 Attending extra lessons (all subjects)	100	62	5	17	9	6	2

The table shows that, of the above activities, students devoted more time doing homework on a normal school day. A quarter of the students spent three hours and more, hanging out with friends, (24%) and, watching television or videos, (24%). Least time was spent, working at a paid job, and, going to the cinema.

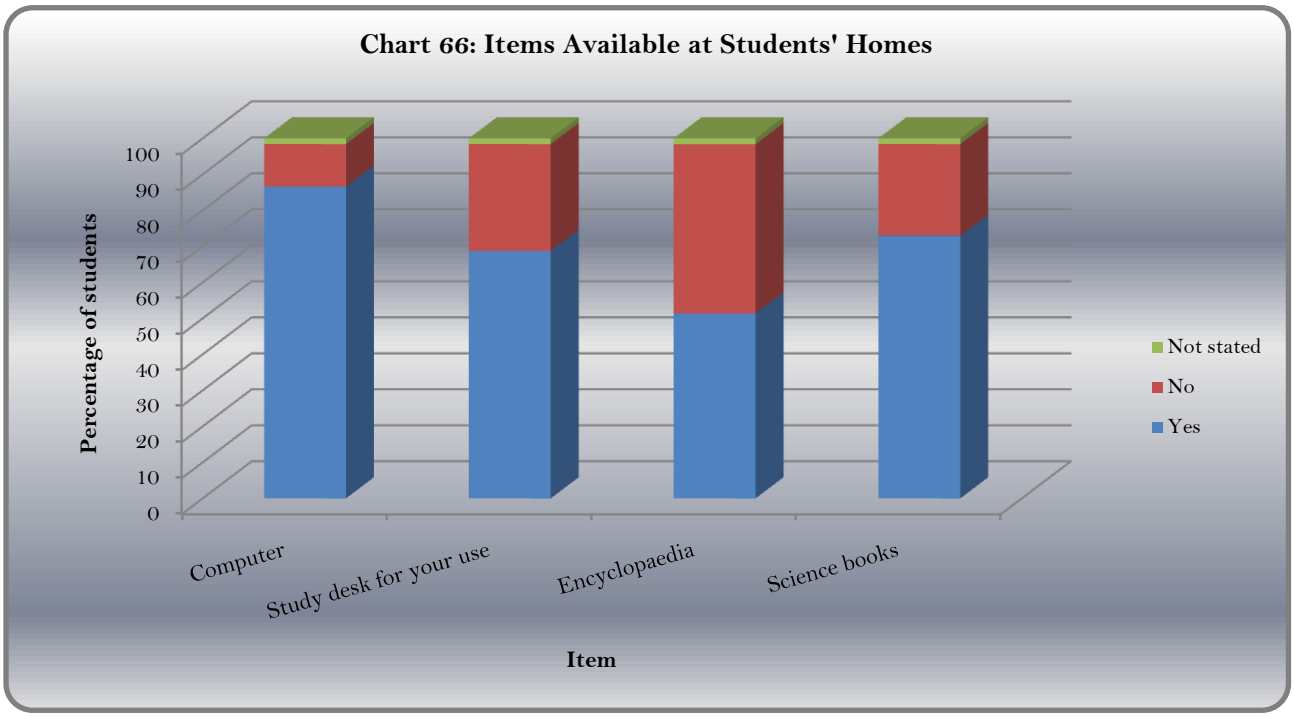


Source: Table 75

Table 76: Items Available at Students' Homes

Item	Available - percentage of students			
	Total	Yes	No	Not stated
	(1)	(2)	(3)	(4)
Computer	100	87	12	2
Study desk for your use	100	69	30	2
Encyclopaedia	100	51	47	2
Science books	100	73	25	2

The data show that most (87%) of the students who participated in the survey had access to a home computer. The majority of students also had science books (73%) other than textbooks, and study desks (69%) at their homes.

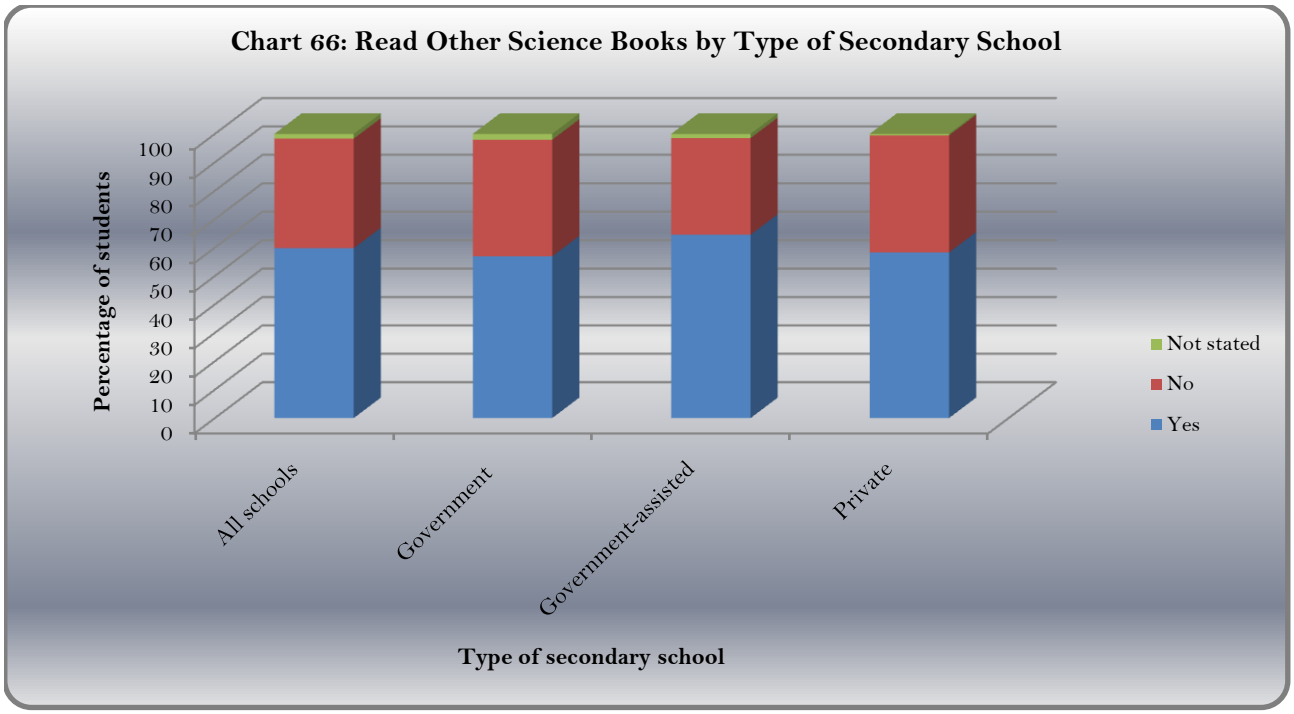


Source: Table 76

Table 77: Read Other Science Books by Type of Secondary School and Form

Type of secondary school	Form	Read other science books - percentage of students			
		Total	Yes	No	Not stated
		(1)	(2)	(3)	(4)
All schools	All forms	100	60	39	2
	Form 1	100	57	41	2
	Form 2	100	54	43	2
	Form 3	100	53	45	2
	Form 4	100	70	29	1
	Form 5	100	68	31	1
Government	All forms	100	57	41	2
	Form 1	100	57	41	2
	Form 2	100	54	43	3
	Form 3	100	49	48	3
	Form 4	100	67	32	1
	Form 5	100	61	38	1
Government-assisted	All forms	100	65	34	1
	Form 1	100	62	36	2
	Form 2	100	57	41	2
	Form 3	100	60	39	1
	Form 4	100	73	26	1
	Form 5	100	71	28	1
Private	All forms	100	58	41	1
	Form 1	100	50	49	1
	Form 2	100	49	51	0
	Form 3	100	52	48	0
	Form 4	100	72	28	0
	Form 5	100	78	21	1

Overall, three-fifths (60%) of the sample of students stated that they read science books other than their textbooks. A further review of the data by form shows that students in the higher forms, 4 (70%) and 5 (68%), read science books more than those in the lower forms, 1 (57%), 2 (54%) and 3 (53%). By type of school, a comparative proportion of students in state (57%), state-assisted (65%) and private (58%) schools read other science books.

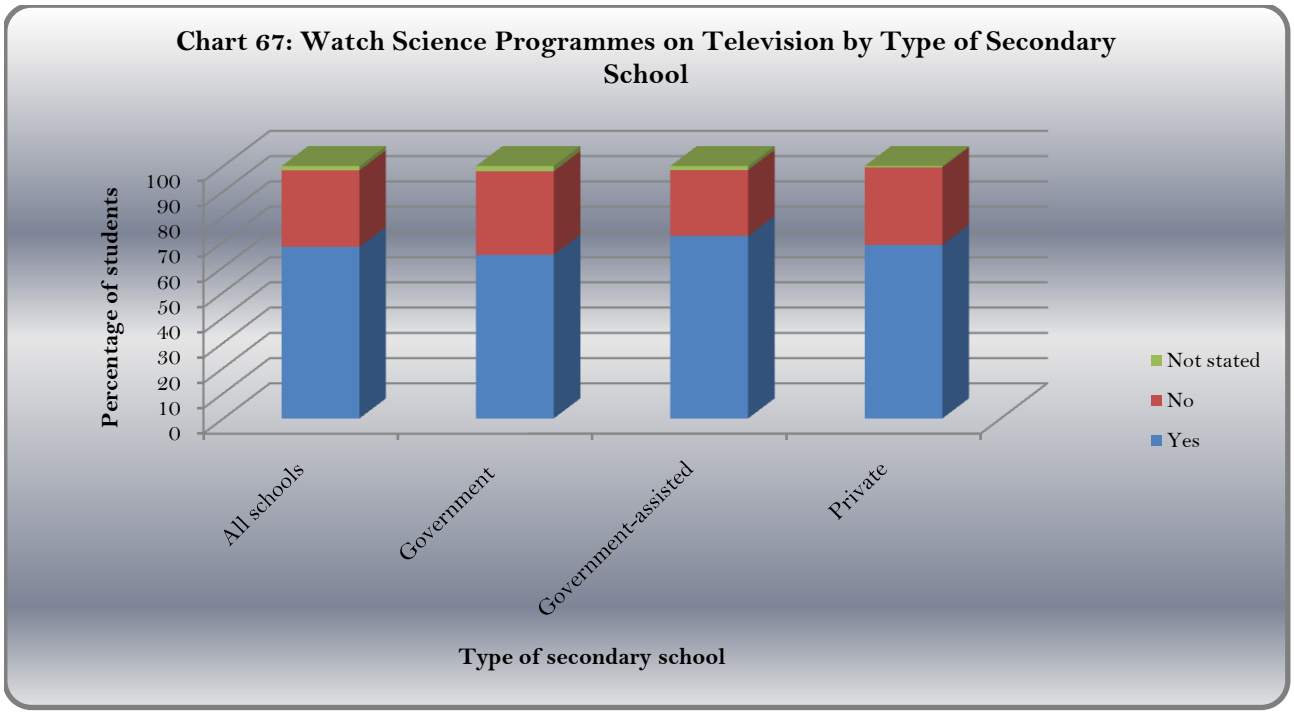


Source: Table 77

Table 78: Watch Science Programmes on Television by Type of Secondary School and Form

Type of secondary school	Form	Watch science programmes - percentage of students			
		Total	Yes	No	Not stated
		(1)	(2)	(3)	(4)
All schools	All forms	100	68	30	2
	Form 1	100	67	32	2
	Form 2	100	63	35	2
	Form 3	100	67	31	2
	Form 4	100	75	24	1
	Form 5	100	70	29	1
Government	All forms	100	65	33	2
	Form 1	100	67	31	2
	Form 2	100	59	38	3
	Form 3	100	61	36	3
	Form 4	100	73	26	1
	Form 5	100	68	31	1
Government-assisted	All forms	100	72	26	2
	Form 1	100	66	32	2
	Form 2	100	69	29	2
	Form 3	100	75	23	1
	Form 4	100	78	21	2
	Form 5	100	73	26	1
Private	All forms	100	69	31	1
	Form 1	100	67	32	1
	Form 2	100	64	36	0
	Form 3	100	74	26	0
	Form 4	100	72	28	0
	Form 5	100	72	26	1

Most students (68%) watched science programmes on television. Television viewing of science programmes was reported by 75% of form 4 and 70% of form 5 students. By type of school, a similar proportion of students in state-assisted (72%), state (65%) and private (69%) schools watched science programmes on the television.

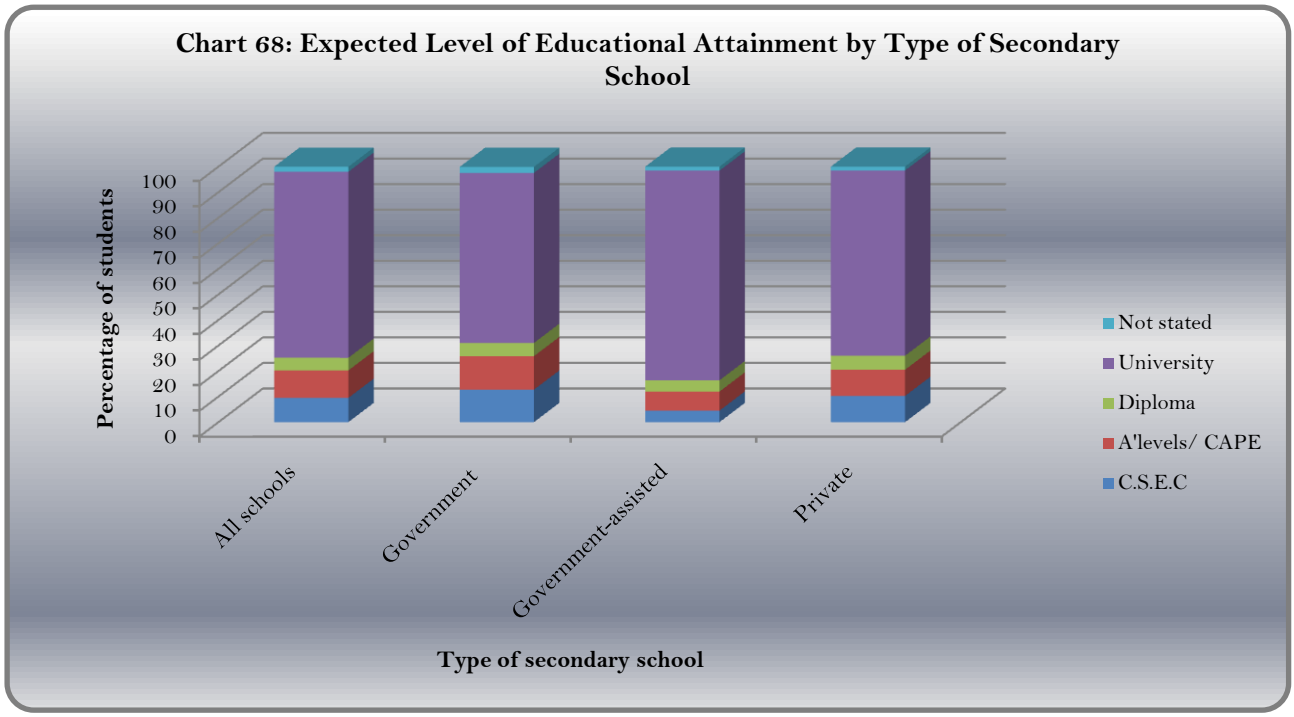


Source: Table 78

Table 79: Expected Level of Educational Attainment by Type of Secondary School

Type of secondary school	Expected educational attainment - percentage of students					
	Total	C.S.E.C	A'levels/ CAPE	Diploma	University	Not stated
	(1)	(2)	(3)	(4)	(5)	(6)
All schools	100	9	11	5	73	2
Government	100	13	13	5	67	2
Government-assisted	100	5	7	4	82	2
Private	100	10	10	6	73	2

A significant percentage (73%) of the total sample of secondary schools students expressed a desire to attain a university-level education. The highest percentage (82%) of students desirous of obtaining this level of education was observed in the government-assisted schools.

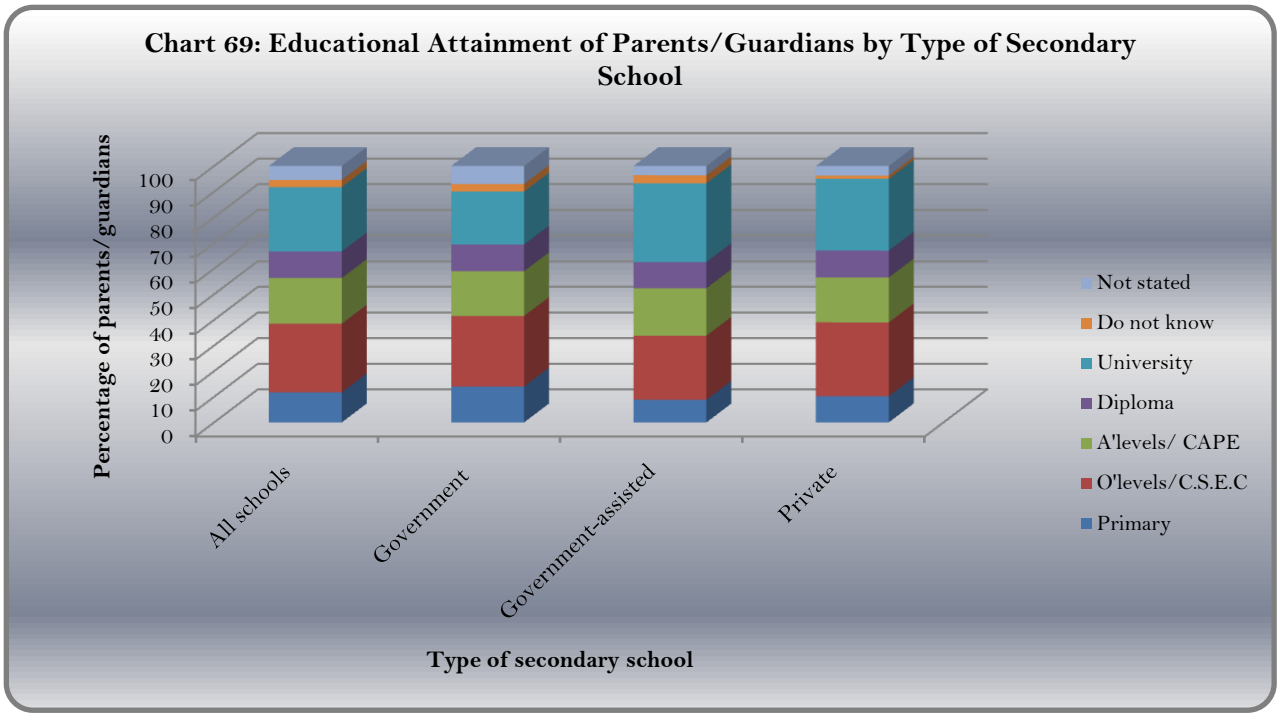


Source: Table 79

Table 80: Educational Attainment of Parents/Guardians by Type of Secondary School

Type of secondary school	Educational attainment of parents/guardians - percentage of parents/guardians							
	Total	Primary	O'levels/ C.S.E.C	A'levels/ CAPE	Diploma	Uni-versity	Do not know	Not stated
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
All schools	100	12	27	18	10	25	3	5
Government	100	14	28	17	10	21	3	7
Government-assisted	100	9	25	19	10	31	3	4
Private	100	10	29	18	11	28	1	4

A quarter of the parents/guardians of students from all schools attained O'levels/C.S.E.C. (27%) and university degrees (25%) as their highest level of educational. Parents/guardians of the students in state-assisted (31%) and private (28%) institutions had achieved university-level education compared to 21% in state schools; this trend is similar to that of the intended educational achievement of students shown in Table 79.



Source: Table 80