Independent State of Papua New Guinea
Japan International Cooperation Agency

Project for Enhancing Access and Capacity of EQUITV Program (EQUITV Phase 2)

End-line Survey Report

January 2016

Department of Education
IC Net Limited
PADECO Co., Ltd.

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Abbreviations and Acronyms

ARoB	Autonomous Region of Bougainville
BOM	Board of Management
CP	Central Province
DEO	District Education Office
DoE	Department of Education
DVD	Digital Video Disc
EMIS	Education Management Information System
EQUITV	Enhancing Quality in Teaching through TV programs
ESP	East Sepik Province
FGD	Focus Group Discussion
ICT	Information Communication Technology
INSET	In-service Teacher Training
JICA	Japan International Cooperation Agency
MSB	Measurement Service Unit
NCD	National Capital District
NEMC	National Education Media Centre
OBE	Outcome Based Education
PDM	Project Design Matrix
PDoE	Provincial Division of Education
PEO	Provincial Education Office
PNG	Papua New Guinea
REO	Regional Education Office
SLIP	School Learning Improvement Plans
SO	Standards Officer
SSO	Senior Standards Officer
TV	Television
WHP	Western Highlands Province

1. Outline of the End-line Survey

1.1 Objectives and Structure of the End-line Survey

1.1.1 Background

This End-line survey (ELS) aims to follow-up on the previous year's monitoring survey. The survey forms part of the Technical Assistance (TA) and intends to collect qualitative and quantitative data in order to capture the current situation and challenges in disseminating and utilizing the EQUITV program.

1.1.2 ELS Target Areas

The monitoring team surveyed selected schools across the five (5) priority provinces of the EQUITV project; National Capital District (NCD), Central Province (CP), East Sepik Province (ESP), West Highland Province (WHP), and Autonomous Region of Bougainville (ARoB).

1.1.3 Target Groups

Teachers in the upper primary level and G8 students were selected as the target groups of the ELS.

1.1.4 Survey Focuses

This survey has two focuses as follows:

- Effectiveness of the EQUITV program (TV lesson) in classrooms
- Positive and negative factors of EQUITV program dissemination

The table below outlines the survey topics and methodology in accordance with the ELS focuses:

Table 1.1: Survey Topics, Methodologies, and the Focuses

(1) Effectiveness of the EQUITV program in classrooms	
Survey Topic	**Methodology (target)**
Consciousness survey (teachers)	Questionnaire (teachers)
Exam (teachers)	Test paper (teachers)
Test (students)	Test paper (students)
(2) Positive and negative factors of EQUITV program dissemination	
Survey Topic	**Methodology (target)**
Current EQUTV program dissemination trends and future forecast	Interview Survey (SOs) Monitoring Meeting*
Identifying positive and negative factors	Questionnaire (head teacher) Interview (Teachers)

*Monitoring Meeting was implemented in March-April, 2015

Questionnaires (for head teacher and teachers) and tests (mathematics and science, for teachers and students) were prepared to gauge the effectiveness of the EQUITV program in classrooms. Since EQUITV Phase 1 focused on mathematics and science education improvement, these two subjects were selected.

(1) Questionnaire (School Headmaster)

The Questionnaire for school headmasters (Appendix A) covers the following items to indicate utilization of the TV lesson program at their respective schools:

- Basic information (name, location, number of teachers and students)
- Number of televisions and other related facilities
- Frequency of TV lessons, resource book utilization and number of teachers trained
- Evaluation of the TV lesson program and additional needs

(2) Questionnaire (Teachers)

Questionnaire for teachers (Appendix B) covers the following items to gauge the impact of EQUITV on the teachers' attitudes and thoughts on education:

- Basic information (name, sex, years in service, TV lesson utilization experience etc.)
- Lesson practice and perceptions (preparation and implementation of lessons, perceptions of students, teaching materials etc.)

(3) Test (for Teachers and Students)

In order to measure knowledge and skills in Mathematics and Science, two types of tests were used as shown in Table 1.2. The tests were exactly the same as the surveys done in years past to carry out fair comparative analysis. The testing time was 40 minutes for each of the two (2) tests. The test paper is attached in the Annex of this report (Appendices C and D).

Table 1.2: Test Coverage

Question	Subject	Strand	Sub-strand	Type[1]	Teacher	Student
Q0101	Math	Number and Application	(G5) Operations: add, sub-tract, multiply, divide	1	✔	✔
Q0102	Math	Number and Application	Decimals	1	✔	✔
Q0103	Math	Number and Application	Decimals	1	✔	✔
Q0104	Math	Number and Application	(G5) Operations: add, sub-tract, multiply, divide	1	✔	
Q0105	Math	Number and Application	Fraction	1	✔	✔
Q0106	Math	Number and Application	Fraction	1	✔	
Q0107	Math	Number and Application	Directed Numbers	1	✔	✔
Q0201	Math	Number and Application	Ratio	1	✔	✔
Q0202	Math	Number and Application	Directed numbers	1	✔	✔
Q0301	Math	Chance and Data	Estimation	2	✔	
Q0302	Math	Space and Shape	Area	1	✔	
Q0303	Math	Space and Shape	Area	2	✔	✔
Q0401	Math	Number and Application	Percentage	2	✔	✔
Q0402	Math	Number and Application	Ratio	2	✔	✔
Q0501	Math	Chance and Data	Statistics	2	✔	
Q0601	Math	Number and Application	Ratio	1	✔	✔
Q0602	Math	Patterns and Algebra	Algebra	2	✔	
Q0701	Math	Space and Shape	Area	2	✔	
Q0801	Math	Space and Shape	Net	2	✔	✔
Q0901	Math	Measurement	Weight	2	✔	
Q0902	Math	Number and Application	Ratio	2	✔	
Q1001	Science	Science in the Home	Using Energy in the Home	1	✔	✔
Q1002	Science	Science in the Home	Using Energy in the Home	2	✔	✔
Q1101	Science	Working Scientifically	NA (Skill)	1	✔	✔

[1] 1: Basic questions; 2: Application questions which require higher level thinking skills.

Question	Subject	Strand	Sub-strand	Type[1]	Teacher	Student
Q1102	Science	Working Scientifically	NA (Skill)	1	✔	✔
Q1103	Science	Science in the Home	Learning about Substance	2	✔	✔
Q1201	Science	Living Things	Ecology, Relationships and Interactions	1	✔	✔
Q1202	Science	Living Things	Ecology, Relationships and Interactions	2	✔	✔
Q1301	Science	Earth and Beyond	Our Earth and its Origin	1	✔	✔
Q1302	Science	Earth and Beyond	Our Earth and its Origin	1	✔	✔
Q1401	Science	Working Scientifically	NA (Skill)	1	✔	✔

1.2 School Visits

1.2.1 Schedule

A series of school visits were conducted from 11th to 31st August 2015 as shown in Table 1.3. All schools visited in the survey undertaken in the last year were selected again for this ELS. In the end, 34 schools were visited (NCD 5, CP 9, ARoB 6, ESP 6, and WHP 8 schools) as shown in Table 1.3.

Table 1.3: School Visit Schedule

Date	Day of Week	School Visited	
		AM	PM
Aug-11	Tue	Kahule (ARoB)/Bukapena (WHP)	Hahela (ARoB)/Mugand (WHP)
Aug-12	Wed	Malasang (ARoB)/Paiakona (WHP)	Tahetahe (ARoB)/Gihamu (WHP)
Aug-13	Thu	Eltupan (ARoB)/Kotna (WHP)	Tanamalo (ARoB)/Lontis (ARoB) /Kumdi (WHP)
Aug-17	Mon	Gohodae (CP)	Rebogoro (CP)
Aug-18	Tue	Karea (CP)/Angoram (ESP)	Ruatoka (CP)/Kasmin (ESP)
Aug-19	Wed	Marinumbo (ESP)	Nindiwi (ESP)
Aug-20	Thu	St. Mary (ESP)	Passam (ESP)
Aug-24	Mon	Allan Jones (CP)	Gaire (CP)
Aug-25	Tue	Toule (CP)	Moreguina (CP)
Aug-27	Thu	Launakaluna (CP)	Papa (CP)
Aug-28	Fri	St. Francis (NCD)	Boreboa (NCD)
Aug-31	Mon	St. Paul (NCD)/Holly Rosary (NCD)	St. Theresa (NCD)

1.2.2 Survey Team Members

The survey team comprised members from both the Monitoring committee and Japanese experts of the EQUITV project. The Japanese experts in charge of the survey are as follows.

Name	In Charge of
Ryuichi Sugiyama (PADECO)	Chapters 1-2 and 4-7
Ryusuke Yamachika (PADECO)	Chapters 1, 3, and 7
Yusuke Morita (Waseda University)	Data analysis in Chapters 2, 5 and 6
Masao Miyakubo (Local Consultant)	Data input and Management

The member list of the Monitoring committee is shown in Table 1.4, and Provincial Education Officers and Standards Officers have participated in the school visits as shown in Table 1.5, respectively in the next pages.

Table 1.4: EQUITV Monitoring Committee Members in Charge of BLS

Title	Name	Affiliation
Chairperson	Mr. James Agigo	PPRD
Deputy Chairperson	Mr. John Kanjip	NEMC
Member	Ms. Hatsi Mirou	NEMC
Member	Mr. Willie Dumo	NEMC
Member	Mr. Essa Godua	NEMC
Member	Ms. Dorothy Ambuk*	MSB
Member	Mr. John Kakas	Curriculum Unit
Member	Mr. Eddi Salfa	HIV Desk
Member	Mr. Aluis Kasian	Teacher Education
Member	Mr. Jonathan Vagal	Teacher Education
Member	Ms. Anne Kona	S&G
Member	Mr. Patrick Dimsok	S&G
Member	Mr. James Namari*	Model school
Member	Mr. Ricky Babone*	Model school

Table 1.5: Support Officers List

Province	Name	Title
ABoB	Mr. Peter Kamuai	Senior Standards Officer
ARoB	Mr. Luke Pamsi	Standards Officer
CP	Mr. Joseph John	Provincial Material Supply Officer
CP	Mr. Philip Alu	Standards Officer
ESP	Mr. Phillip Rofunduo	Standards Officer
ESP	Mr. Patrick Kasimou	Standards Officer
ESP	Mr. Andrew Eigoron	Senior Standards Officer
WHP	Mr. Stanley Wantakson	Senior Standards Officer
WHP	Mr. Thomas Rombil	Standards Officer
WHP	Mr. Pius Peter	Standards Officer
WHP	Mr. Esky Tikil	Standards Officer

1.2.3 Survey Organization

During the school visits, the monitoring activities were organized through on-site consultation between school headmasters and the visiting survey team, to effectively conduct the activity. This was done to avoid disrupting regular lessons. Some schools had to skip some of the monitoring activities because appropriate participants were not present at the school site at the time of the survey to provide responses. The monitoring activities undertaken at each school are shown in Table 1.6.

Table 1.6: Survey Organization at School

Time	Agenda	Survey Tool	Target
15 min.	Orientation	-	Headmasters
60 min.	Filling out the question-naire	Questionnaire (Headmaster) Questionnaire (Teacher)	Headmaster Teachers (Grades 6-8)
60 min	Interview (Teachers)	-	Headmaster Teachers (Grades 6-8)
40 min	Test	Question sheet	G8 student Teachers (grade 6-8)

1.2.4 Interviews with SOs

The interviews with SOs (shown in Table 1.5) are conducted to gather information about schools supervised by the SOs, to grasp the current status of EQUITV program dissemination, and to estimate the trends and future forecast. Except for CP, in which the COs had no time to be interviewed due to an urgent matter on the survey day, the information about ARoB, ESP, WHP, and NCD was gathered from SOs. The detailed survey items are as follows:

- Current status of EQUITV Program Utilization
- TV Screen Instalment
- Attendance at Teacher Training
- Distribution of Resource Materials (such as TRB, SWB, and DVD)
- Current status to ensure budget for EQUITV Program

1.2.5 Monitoring Meetings (in March–April 2015)

The monitoring meetings and head teachers' meeting were implemented, from March to October 2015, separately from the ELS, in NCD, CP (Rigo and Kairuku), NIP (Kavieng and Namatanai), and ENP (Rabaul). The objective of these meetings is mainly to gather information regarding EQUITV program utilization through questionnaires, based on school census, and interviews, to grasp and consider the current status of EQUITV program dissemination. In addition, these opportunities aimed to raise awareness towards schools and share the good practice realized in successful schools with others, to improve the utilization rates. The data gathered on these occasions will be supplementary, but also used to analyze the current status of EQUITV program dissemination in the ELS.

2. Sample Size and Its Limitations

2.1 Sample Size

Data was collected from a total of 34 schools across the five targeted provinces. These provinces were part of the EQUITV Phase 1 program. The sample size (number of questionnaires or tests collected) is shown in Table 2.1 below.

Table 2.1: Overall Sample Size

		Questionnaire		Test	
Province	**School**	**Head Teachers**	**Teachers**	**Teachers**	**Students**
ARoB	Elutupan	1	4	4	37
ARoB	Kahule	1	2	3	28
ARoB	Lontis	0	0	0	20
ARoB	Tahetahe	1	3	3	14
ARoB	Tanamalo	1	3	3	26
ARoB	Malasang	1	3	3	30
ARoB	Hahela	1	8	8	29
CP	Gaire	1	7	7	20
CP	Papa	1	2	3	34
CP	Ruatoka	1	2	2	39
CP	Lebogoro	1	1	1	21
CP	Toule	1	5	6	48
CP	Gohodae	1	3	3	31
CP	Moreguina	1	0	0	15
CP	Allan Jones	1	9	11	14
CP	Kerea	1	2	2	19
CP	Launakarana	1	4	4	29
ESP	Angoram	1	10	10	23
ESP	Marinumbo	1	5	5	38
ESP	Nindiwi	1	7	7	28
ESP	Passam	1	4	4	24
ESP	St. Mary	1	11	11	22
ESP	Kasmin	1	3	3	33
NCD	St Francis	1	5	5	7
NCD	Boreboa	1	8	8	35
NCD	St. Paul	1	5	4	13
NCD	Holy Rosary	1	9	5	37
NCD	St. Therese	1	8	4	25
WHP	Paiakona	1	3	3	40
WHP	Gihamu	1	5	5	13
WHP	Bukapena	1	6	6	43
WHP	Mugand	1	5	5	35
WHP	Kotna	1	6	6	15
WHP	Kumdi	1	3	3	34
Total		**33**	**161**	**157**	**919**

2.2 Composition of the Samples

2.2.1 EQUITV Utilization at the Surveyed School

The composition of teachers who participated in the test is shown in Table 2.2 below with their years in service, sex and province. As indicated, samples are reasonably well distributed across all categories (years in service, sex and province) therefore the respondents provide a good representation of teachers for further comparative analysis in later stages.

Table 2.2: Composition of Sampled Teachers

Province	Total	Sex	Sub-Total	Years in Service					
				No Answer	–5 yrs	–10 yrs	–15 yrs	–20 yrs	21 yrs+
ARoB	24	M	7	1 (14.3)	0 (0.0)	1 (14.3)	4 (57.1)	1 (14.3)	0 (0.0)
		F	17	2 (11.8)	0 (0.0)	4 (23.5)	5 (29.4)	1 (5.9)	5 (29.4)
CP	39	M	20	2 (10.0)	3 (15.0)	5 (25.0)	4 (20.0)	1 (5.0)	5 (25.0)
		F	19	3 (15.8)	6 (31.6)	2 (10.5)	2 (10.5)	2 (10.5)	4 (21.1)
ESP	40	M	18	1 (5.6)	5 (27.8)	4 (22.2)	2 (11.1)	1 (5.6)	5 (27.8)
		F	22	1 (4.5)	5 (22.7)	5 (22.7)	1 (4.5)	3 (13.6)	7 (31.8)
NCD	26	M	7	2 (28.6)	1 (14.3)	2 (28.6)	0 (0.0)	0 (0.0)	2 (28.6)
		F	19	3 (15.8)	5 (26.3)	5 (26.3)	2 (10.5)	0 (0.0)	4 (21.1)
WHP	28	M	16	0 (0.0)	8 (50.0)	2 (12.5)	5 (31.3)	1 (6.3)	0 (0.0)
		F	12	1 (8.3)	4 (33.3)	6 (50.0)	0 (0.0)	1 (8.3)	0 (0.0)
Total	157	M	68	6 (8.8)	17 (25.0)	14 (20.6)	15 (22.1)	4 (5.9)	12 (17.6)
		F	89	10 (11.2)	20 (22.5)	22 (24.7)	10 (11.2)	7 (7.9)	20 (22.5)

*Figures in brackets represent composition ratio (%)

2.2.2 Student Participants in the Tests

The number of students involved in the test is categorized according to their age, sex, grade and province in Table 2.3. The targeted grade for the survey was G8 and the standard age of the students was 14 years. Even though, looking at the composition, the group of student age between 15 to 20 years was dominant, and there were only a few students in the categories “less than 10 years old” and “more than 20 years old”, this is the same as the last year. Male and female distributional representation of students and the sample size is sufficiently large for analytical work.

Table 2.3: Student Participation in the Test by Age Group

Province	# of School	Sex	Sub-Total	Age group				
				No Answer	–10 yrs	–15 yrs	–20yrs	21 yrs+
ARoB	184	M	72	2 (2.8)	0 (0.0)	18 (25.0)	52 (72.2)	0 (0.0)
		F	112	5 (4.5)	0 (0.0)	28 (25.0)	79 (70.5)	0 (0.0)
CP	270	M	151	9 (6.0)	1 (0.7)	50 (33.1)	87 (57.6)	4 (2.6)
		F	119	3 (2.5)	0 (0.0)	37 (31.1)	78 (65.5)	1 (0.8)
ESP	168	M	94	1 (1.1)	0 (0.0)	20 (21.3)	71 (75.5)	2 (2.1)
		F	74	1 (1.4)	0 (0.0)	22 (29.7)	50 (67.6)	1 (1.4)
NCD	117	M	59	2 (3.4)	0 (0.0)	22 (37.3)	35 (59.3)	0 (0.0)
		F	58	1 (1.7)	0 (0.0)	36 (62.1)	21 (36.2)	0 (0.0)
WHP	180	M	105	4 (3.8)	0 (0.0)	26 (24.8)	73 (69.5)	2 (1.9)
		F	75	0 (0.0)	0 (0.0)	36 (48.0)	38 (50.7)	1 (1.3)
Total	919	M	481	18 (3.7)	1 (0.2)	136 (28.3)	318 (66.1)	8 (1.7)
		F	438	10 (2.3)	0 (0.0)	159 (36.3)	266 (60.7)	3 (0.7)

*Figures in brackets represent composition ratio (%)

2.2.3 Teacher Respondents to the Questionnaire

The composition of the teacher respondents to the questionnaire, by years in service, sex and province, is shown in Table 2.4 below. Although there were slightly less teachers in the category “less than 20 years old”, samples are reasonably well distributed across all of the categories (years in service, sex and province) and therefore the respondents provide a good representation of teachers for further comparative analysis in later stages.

Table 2.4: Composition of Samples by Years in Service

Province	Total	Sex	Sub-Total	Year in service					
				No Answer	–5 yrs	–10 yrs	–15 yrs	–20 yrs	21 yrs+
ARoB	23	M	7	0 (0.0)	0 (0.0)	1 (14.3)	5 (71.4)	1 (14.3)	0 (0.0)
		F	16	0 (0.0)	0 (0.0)	4 (25.0)	6 (37.5)	1 (6.3)	5 (31.3)
CP	35	M	17	0 (0.0)	3 (17.6)	5 (29.4)	5 (29.4)	1 (5.9)	3 (17.6)
		F	18	0 (0.0)	4 (22.2)	2 (11.1)	4 (22.2)	3 (16.7)	5 (27.8)
ESP	40	M	18	3 (16.7)	2 (11.1)	6 (33.3)	1 (5.6)	1 (5.6)	5 (27.8)
		F	22	2 (9.1)	4 (18.2)	5 (22.7)	1 (4.5)	3 (13.6)	7 (31.8)
NCD	35	M	7	1 (14.3)	0 (0.0)	4 (57.1)	1 (14.3)	0 (0.0)	1 (14.3)
		F	28	1 (3.6)	8 (28.6)	6 (21.4)	7 (25.0)	1 (3.6)	5 (17.9)
WHP	28	M	17	0 (0.0)	9 (52.9)	2 (11.8)	4 (23.5)	2 (11.8)	0 (0.0)
		F	11	1 (9.1)	2 (18.2)	7 (63.6)	0 (0.0)	0 (0.0)	1 (9.1)
Total	161	M	66	4 (6.1)	14 (21.2)	18 (27.3)	16 (24.2)	5 (7.6)	9 (13.6)
		F	95	4 (4.2)	18 (18.9)	24 (25.3)	18 (18.9)	8 (8.4)	23 (24.2)

*Figures in brackets represent composition ratio (%)

2.3 Limitations

Geographic characteristics were not considered for analysis. Moreover, the student test included questions on the syllabus covered in Grades 6 through 8. The test also contains numbers of questions on topics that students have not yet studied. Therefore, student scores were influenced by the extent of lessons taught at each school at the time of the ELS. Such differences, however, were hard to identify and, therefore, were not considered in the analysis.

3. Trends in the EQUITV Dissemination at Target Schools

3.1 Current Status of EQUITV Program Utilization in Targeted Schools

3.1.1 Overview

A summary of the test and interview results and utilization rate in targeted schools is described in Table 3.1. The test result includes the average percentage of questions answered correctly. The academic achievement will be discussed through detailed analysis in Chapter 5. This Chapter mainly examines the utilization status of EQUITV program.

The current status of EQUITV program utilization in each year shows the status on the survey day. “Not yet” means the schools have not started using the EQUITV program yet (or are inexperienced). “Stopped” means the schools have once started, but have currently stopped for some reason. Malasang Primary School was categorized as “Ready”, because equipment has been installed properly in each classroom, thus the school is ready to use the EQUITV program physically. But the use of the program is fully depended on teachers’ intentions; some teachers use it and others do not.

“Gen-set” includes the schools using generators. Schools without this mark are supplied electricity by power line, and are located in the electrified regions. The survey confirmed that all schools in the unelectrified region had generators available for EQUTIV program, excluding Gohodae Primary School in which a generator was privately used, but not for the program.

“TVs” means the number of TV screens that each school has. The survey did not check all TV screens at each school and these figures are based on the answer in the head teacher’s questionnaire. The data might include broken screens, because head teachers who have recently moved to the school may not know the actual TV screen status, if they work or not, particularly in some “Stopped” schools, as some of them have been removed to store rooms.

The status on “TRB (Teacher Resource Book)”, “SWB (Student Work Book)” and “DVD” are also based on the result of the head teacher’s questionnaire. Even though these materials had been actually distributed, schools in which head teachers have not recognized the delivery were unchecked. “Teacher training participation” data may also be inconsistent with the project’s training records, because when teachers who participated in trainings transferred to other schools and there were no trained teachers in the school as the result, head teachers tended to report “No training received” (e.g. Gaire Primary School reported like this, although the project confirmed the school received training). Lontis Primary School participated in the students’ test only in this ELS; thus some fields indicate “n/a”.

A remarks column in the table summarizes the key factors or motivation to use/stop EQUITV program based on the interviews with teachers in this field survey.

Table 3.1: Current Status of EQUITV Program Utilization and Test Results

Status		Prov.	School Name	EQUITV Utilization 2013	2014	2015	Gen-set	TVs	TRB *2	SWB *3	DVD	Training	Average test score Trs	Stds	Media *4	Remarks
Using	3 years (continuous)	ARoB	Lontis	Using	Using	Using	✓	1	n/a	n/a	n/a	n/a	n/a	32.7%	Sat	Using for 10 years. Technical Staff manages equipment
		CP	Launakarana	Using	Using	Using	✓	4	✓	✓	✓	✓	64.2%	34.6%	Air	Manage generator with fuel fee collected from teachers
		NCD	St Therese	Using	Using	Using		7	✓	✓	✓	✓	57.5%	36.9%	DVD	Competent class trainer is leading
		WHP	Paiakona	Using	Using	Using		3	✓	✓	✓	✓	65.6%	31.0%	DVD	DVD improved the utilization more
		ESP	St Mary	Using	Using	Using		10	✓	✓	✓	✓	69.1%	45.2%	DVD	Shifted to DVD with subject teacher this year
		WHP	Kumdi	Using	Using	Using		1			✓	✓	80.0%	24.5%	DVD	Recognize TV program effect
	2 years (continuous)	CP	Allan Jones	Not Yet	Using	Using	✓	2	✓	✓	✓	✓	61.8%	39.0%	DVD	TV in combined class and review in each class
		CP	Moreguina	Not Yet	Using	Using	✓	2	✓	✓	✓	✓	n/a	41.5%	DVD	Bulk purchasing for fuel by drum to save cost
		CP	Papa	Not Yet	Using	Using		2	✓	✓	✓		71.1%	30.7%	DVD	Motivated by training
		CP	Toule	Not Yet	Using	Using	✓	1	✓	✓	✓	✓	58.9%	25.9%	DVD	Started with receiving equipment/training
		WHP	Kotna	Not Yet	Using	Using	✓	1	✓	✓	✓	✓	67.8%	39.7%	DVD	Pay attention to fuel fee resource
		ESP	Angoram	Stopped	Using	Using	✓	2	✓	✓	✓	✓	56.7%	23.3%	DVD	Restarted with DVD and Generator
		ESP	Marinumbo	Stopped	Using	Using		4			✓		68.7%	38.4%	DVD	Restarted with DVD
	2 yrs	ARoB	Kahule	Using	Stopped	Using	✓	3	✓			✓	64.4%	36.2%	Sat	Restarted by changing broken decoder
		ARoB	Tahetahe	Using	Stopped	Using	✓	5			✓	✓	74.4%	34.4%	Sat	Restarted by changing broken decoder
		ESP	Nindiwi	Using	Stopped	Using	✓	2			✓		58.1%	38.1%	Air	HT takes a leadership role
		ESP	Passam	Using	Stopped	Using		2			✓		65.8%	31.6%	DVD	Planning to buy generator
	1 yrs	CP	Ruatoka	Stopped	Stopped	Using		1	✓	✓	✓	✓	31.7%	28.9%	DVD	Weak leadership
		CP	Lebogoro	Not Yet	Not Yet	Using	✓	2	✓	✓	✓	✓	70.0%	28.1%	DVD	Trial using in G7
	other	ARoB	Malasang	Stopped	*Ready*	*Ready*		6	✓		✓		81.1%	43.8%	Sat	Using, is ready in each class
Stopped	-1 yrs	CP	Gaire	Using	Using	Stopped		8		✓	✓		55.7%	50.5%	Temporarily Stopped for teacher transfer, lost TRB	
		ESP	Kasmin	Not Yet	Not Yet	Stopped	✓	0			✓	✓	64.4%	36.6%	TV was broken after inception, Planning to buy new one	
		CP	Gohodae	Not Yet	Not Yet	Stopped	✓*5	1			✓		68.9%	17.2%	Stopped because generator was used privately	
		NCD	Boreboa	Not Yet	Not Yet	Stopped		5	✓	✓	✓	✓	60.4%	33.1%	Stopped for frequent blackout and DVD stolen	
	2 yrs	CP	Kerea	Using	Stopped	Stopped	✓	1	✓	✓	✓	✓	48.3%	21.1%	Stopped for TV broken, cracked DVD, lack of Trs understanding	
		NCD	Holy Rosary	Using	Stopped	Stopped		4				✓	52.0%	37.5%	Stopped for inadequate pace of TV program	
		NCD	St Francis	Using	Stopped	Stopped		2	✓	✓	✓	✓	57.3%	28.6%	Stopped for a school building under construction	
		NCD	St Paul	Using	Stopped	Stopped		1	✓	✓	✓	✓	75.8%	43.0%	Stopped for Teacher Transfer, DVD stolen	
	+3 yrs	ARoB	Elutupan	Stopped	Stopped	Stopped	✓	1	✓			✓	89.2%	36.2%	Stopped for fuel fee shortage and students increased	
		ARoB	Hahela	Stopped	Stopped	Stopped		5			✓	✓	72.9%	46.9%	Stopped for TV screen shortage for student increased	
		ARoB	Tanamalo	Stopped	Stopped	Stopped	✓	1					66.7%	23.4%	Stopped for broken decoder, lacking fuel fee	
		WHP	Bukapena	Stopped	Stopped	Stopped		3				✓	57.2%	22.8%	Stopped for TV broken, teachers' no understanding	
		WHP	Gihamu	Stopped	Stopped	Stopped		1	✓	✓			63.3%	39.5%	No teachers who can use program	
		WHP	Mugand	Stopped	Stopped	Stopped		7					74.0%	37.9%	No teachers who can use program	

*1: Blank space on generator means schools powered by PNG Power *2: Teacher Resource Book *3: Student Work Book *4: Media was shown only for schools using. "Sat" is satellite dish, "Air" is Aerial Antenna, "DVD" is using DVD. Some schools utilized more than 2 media. *5: At the time of the survey, generator was not available

3.1.2 Electricity and Generator

The survey shows that non-electrification is not necessarily a negative factor for EQUITV program usage. 16 schools among the surveyed schools are located in the non-electrified region, and are utilizing a generator. According to the utilization status, 5 among 14 stopped schools (about 36%) are using a generator, while 11 among 20 using schools (55%), more than a half, are using one. Rather than generator usage, frequent blackouts are the main cause of schools which stop using the program, according to the result of interview with teachers. The fact generators can supply power in a stable manner will probably contribute to sustain using EQUITV program. On the other hand, 3 among 5 stopped schools using a generator have stopped the program, due to the difficult management of the fuel fee, private utilization of generators etc. It is assumed that a stable power supply has a great influence on the sustainability of EQUITV program, regardless of whether the school is electrified or not.

Launakarana Primary School, a school using the program, gathered the fuel fee for the generator in a semi-obligatory manner. But at the same time, the school allowed teachers to utilize a generator not only in the classroom for a lesson, but also at teachers' homes at night. Also, Moreguina Primary School keeps using the program by buying an oil drum when fundraising successfully. The fact that these kinds of good practices were identified in this year proves that the survival rate of EQUITV will be enhanced.

3.1.3 TV Screen

As Table 3.1 indicates, each school has a TV screen, regardless of the utilization status, excluding Kasumin Primary School in which the screen was broken shortly after program inception. The survey reveals that essential equipment has been distributed to almost all schools. But, the number of TV screens belonging to a school is based on a declaration by the head teacher. Some stopped schools put their TV screen in a warehouse, and in these cases whether it is functioning cannot be confirmed. It is possible that these screens include broken ones.

3.1.4 Printed Resource Materials (TRB/SWB)

More than half of using primary schools had printed resource materials. 14 among 19 schools (about 74%), excluding Lontis Primary School, had TRB, whilst 12 schools (about 63%) had TRB. On the other hand, less than half of stopped schools had printed resource materials. 6 among 14 stopped schools (43%) had TRB whilst 6 among 14 schools (43%) had SWB. Some schools use the TV program without printed resource materials, but it cannot be denied that deployment of printed materials has an impact on the utilization status.

3.1.5 Deployment and Utilization Status of DVD

Most of using schools and a little more than half of stopped schools had DVDs. 18 among 19 using schools (about 95%), excluding Kahule primary school, had already received DVDs, whilst 8 among 14 stopped schools (about 57%) had received it. Although more than half of stopped schools had DVDs, the difference when compared to using schools is major. It means that the utilization status might be improved by distributing DVDs to stopped schools not currently receiving DVDs.

As for the composition of media, the 14 among 20 using schools used DVDs, 4 schools satellite broadcasting, and only 2 schools an aerial antenna. As St. Mary Primary School and Paiaokona Primary School transferred from aerial antenna broadcasting to DVD, its utilization rate has been rapidly enhanced. It was frequently pointed out that a sudden change of broadcasting schedule was a negative factor since the past survey in Phase 1. Nevertheless, this kind of complaint was not indicated in 20 using schools. Transfers to DVD would probably be the correct judgment, although this issue was discussed at the end of Phase 1.

Some schools complained that the use of DVDs was a little difficult because a DVD was easily flawed and becomes unusable. Also, it was demanded that a supporting system be strengthened or video data be distributed through USB. This should be noted hereafter.

3.1.6 Training Coverage

14 among 19 primary using schools (about 74%), excluding Lontis Primary School, and 9 among stopped schools (about 64%), attended teacher trainings. In this regard there is not as big a difference as deployment of printed resource materials and DVDs. This result also does not indicate that the attendance at teacher training changes the utilization status.

Although Gaire (CP), Marinumbo, Nindiwi, and Passm Primary Schools (ESP) received teacher training on the training records, they are reported as "Not received training". This means that there are not trained teachers, due to their transfer. On the other hand, there are some schools reporting "received training" in WHP, although training has never been conducted. It is possible that there are provincial trainers in the schools, trained teachers transferred to other schools, or the schools have confused the training with the previous phase, even though those schools have teachers who can use the EQUITV program. Although there is some inconsistent data like this, the schools' recognition was incorporated, because the existence of a trained teacher has an impact on utilization.

3.1.7 Budget for EQUITV

The current status of ensuring the budget for EQUITV program is good. Although remittance seems to be often delayed, there are less complaints from schools regarding the budget in this year's survey, because of the realization of free education. Table 3.2 shows the amount of budget for EQUITV program in the surveyed schools, excluding Lontis Primary School.

Table 3.2: Budget for EQUITV in Surveyed Schools

Using			Stopped		
Prov.	**School Name**	**Budget (PGK)**	**Prov.**	**School Name**	**Budget (PGK)**
ARoB	Kahule	4,000	ARoB	Elutupan	2,000
ARoB	Malasang	12,000	ARoB	Hahela	2,000
ARoB	Tahetahe	10,000	ARoB	Tanamalo	5,700
CP	Allan Jones	3,000	CP	Gaire	2,000
CP	Launakarana	2,000	CP	Gohodae	
CP	Lebogoro	1,000	CP	Kerea	
CP	Moreguina	2,000	ESP	Kasmin	3,000
CP	Papa		NCD	Boreboa	10,000
CP	Ruatoka	2,000	NCD	Holy Rosary	2,000
CP	Toule	1,500	NCD	St. Francis	3,000
ESP	Angoram		NCD	St. Paul	5,000
ESP	Marinumbo	3,000	WHP	Bukapena	
ESP	Nindiwi	2,000	WHP	Gihamu	
ESP	Passam	3,000	WHP	Mugand	
ESP	St. Mary				
NCD	St. Therese	3,000			
WHP	Kotna				
WHP	Kumdi	1,000			
WHP	Paiakona				
	Average per school	3,536		Average per school	3,856

The blank space is used for a school in which the head teacher was absent on the survey day. Also, the amount of budget was not answered by the head teacher but by other teachers, and so might not be the right figure. Therefore it is important to be reminded that the amount is used as a reference.

14 among 19 using schools (about 74%) and 9 among 14 stopped schools (about 64%) reported that are ensured of the budget. Although the amount is not the right figure, the probability of ensuring the budget somehow is high, and the rate of schools ensuring the budget will be higher than the result of the survey suggests. In comparing the average amount, there is not a big difference between the using schools and stopped schools.

3.2 Positive and Negative Factors of EQUITV Utilization

Shortly after finishing the school visits, a problem analysis workshop was implemented to identify positive and negative factors regarding EQUITV usage, along with the results of interviews with head teachers, teachers, and SOs.

In past surveys, a lot of schools considered the issues regarding viewing live broadcasts as the main negative factor (e.g. weak reception, changeable time schedule etc.). In fact, schools stopped the program on the grounds of multiple problems, such as power, but it was difficult to clarify the causal relationship regarding TV utilization. However, the DVD distribution largely resolved the issues related to broadcast media. As a result, in the ELS it is relatively easy to analyze the problems.

Through workshops and discussions, the survey team concluded that the EQUITV program utilization and dissemination could be divided into 5 stages as follows:

- Level 0: Readiness of TV Utilization Setting
- Level 1: Awareness of Teacher
- Level 2: Maintenance of TV Utilization Setting
- Level 3: Resolution of School Specific Issues
- Level 4: Teachers' Recognition of Effects/values

A conceptual diagram showing these 5 stages' logical relationship is displayed in Figure 3.1. The diagram clarifies the relationship of positive and negative factors, according to the status of EQUITV utilization. The vertical line basically shows the teachers' utilization status, including "Setting is ready", "Start using", "Keep using" and "Utilizing (thoughtfully)", while the factors on the left side are the domain of "Schools", and the right side are of the "Ministry of Education (and Project)".

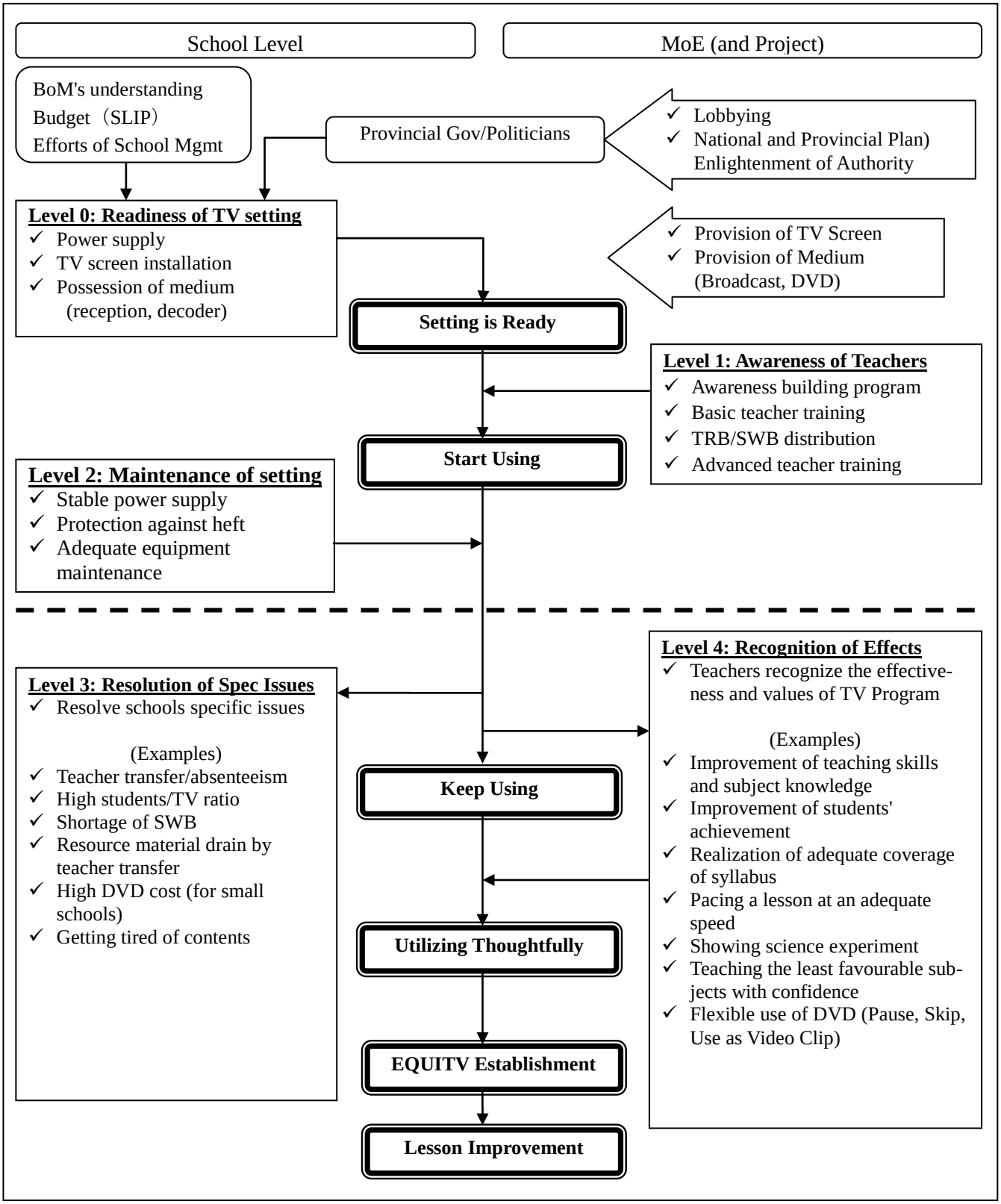

Figure 3.1: Causal Relationship of Negative/Positive Factors of EQUITV Program

3.2.1 Level 0: Readiness of TV Setting

This level describes the factors which are indispensable prerequisites for commencement of the EQUITV program. In particular, it includes "power supply", "TV screen installation", and "possession of media (such as decoder, reception)". After meeting these conditions, it is possible to jump up to the stage "Setting is ready". The following is the case of Kasmin Primary School, which remains at the level 0 stage.

The responsible authority to meet the conditions of this level is the Ministry of Education (and Project) and School. The Ministry of Education should make an effort to incorporate EQUITV program into the national and provincial policies, make influential officers aware of it, and provide TV screens and media (broadcasting and DVDs) to schools. At the school level, it is expected that BoM understands the EQUITV program, ensures the necessary budget (SLIP), and so on, supported by an effort by the school management group.

Table 3.3: Case of Kasmin Primary School

<table>
<tr><td>School Name</td><td>Kasmin Primary School</td><td rowspan="2">Usage</td><td>2013</td><td>2014</td><td>2015</td></tr>
<tr><td>District (Province)</td><td>Angoram (ESP)</td><td>Not Yet</td><td>Not Yet</td><td>Stopped</td></tr>
<tr><td>No. of Stds & Trs</td><td colspan="5">335 students and 7 teachers (approximately)</td></tr>
<tr><td>Usage</td><td colspan="5">Used with DVD during the last part of 2014 and the first part of 2015, but stopped now</td></tr>
<tr><td>Negative Factors</td><td colspan="5">✓ Used TV program with DVD, targeting G7 and G8, but now stopped because TV screen is broken (Level 0)
✓ DVD player and Power supply (small generator) is functioning (Level 0)
✓ There are neither TRB nor SWB (Level 1)
✓ There are a few teachers who received training, but not all. Some trained teachers may transfer to other schools, and so more frequent training is necessary (Level 1)
✓ Teachers assured that the TV program is effective, rather than a lesson just explaining with a text (Level 4)</td></tr>
<tr><td>Consideration</td><td colspan="5">✓ This school transferred to the "Start Using" stage, when TV setting was ready and teachers' understanding was improved in the last part of 2014
✓ Nevertheless, the school stopped using TV program because TV screen was not installed (Level 0)
✓ Then TV screen installation should be prioritized in this school, rather than the resolution of the shortage of TRB/SWB</td></tr>
<tr><td colspan="3"> 
G8 Students taking a test</td><td colspan="3"> 
Classroom in school</td></tr>
</table>

3.2.2 Level 1: Awareness of Teachers

This level is the stage in which teachers gain the understanding and knowledge to actually start using TV program, after TV setting is ready. In particular, it includes the implementation of an awareness campaign for teachers, basic/advanced training regarding EQUITV, and distribution

of TRB and SWB. These activities fall under the Ministry of Education's responsibility. As an example of a school at this level, the case of Malasang Primary School is shown below.

Table 3.4: Malasang Primary School

<table>
<tr><td>School Name</td><td>Malasang Primary School</td><td rowspan="2">Usage</td><td>2013</td><td>2014</td><td>2015</td></tr>
<tr><td>District (Province)</td><td>Buka (ARoB)</td><td>Stopped</td><td>Ready</td><td>Ready</td></tr>
<tr><td>No. of Stds & Trs</td><td colspan="5">420 students and 17 teachers (approximately)</td></tr>
<tr><td>Usage</td><td colspan="5">Restarted TV program in 2014</td></tr>
<tr><td>Negative Factors</td><td colspan="5">✓ The ARoB time zone has been established recently, and there is a time difference with other provinces in PNG. As a result, the schools face difficulties in implementing the TV program along with the broadcasting schedule
✓ Head teacher actively tries to use the TV program and there are some teachers who received training. Then the effectiveness of the TV program is recognized and teachers believe the TV program's effectiveness because it is authorized by Ministry of Education (Level 4)
✓ There is no SWB. Many of the TV programs are basically designed to be used with work sheets. The school has a copy machine, but teachers hesitate to make copies to distribute to all students in every lesson (Level 1)
✓ TV program resources materials are partially used. Some teachers see the DVD on their PC to prepare for the lesson regarding the subject in which teaching or doing experiments are hard to understand (Level 4)
✓ Because of head teachers and BoM's understanding, there is no problem regarding the budget and equipment including power supply (Level 0)
✓ Teachers themselves understand how to use TV equipment, and then there is no problem from the technical and management perspectives (Level 1)</td></tr>
<tr><td>Consideration</td><td colspan="5">✓ The school is at the stage of "Setting is ready", because TV screen, power supply, and media are secured
✓ The teachers believe and recognize the effectiveness of the TV program. Some factors in level 4 are identified, as teachers study the lesson method with DVD
✓ Even though the conditions at level 1 (esp. SWB) are not met, then the school stopped using the program</td></tr>
<tr><td colspan="3"> 
Possible to use TV program in each class</td><td colspan="3"> 
With TV program's model teacher</td></tr>
</table>

3.2.3 Level 2: Maintenance of TV Setting Readiness

To transfer to the stage of using the TV program without stopping usage, schools must have the capability to maintain the environment regarding TV setting. This level includes factors such as stable power supply, protection against theft, and adequate management of equipment and resources.

As for the equipment, it is confirmed that the transfer from EMTV to DVD resolved most of the issues regarding EMTV. Meanwhile, DVDs have the specific problem that once flawed, they

cannot be used again. Although schools are responsible for the issues on this level, the Ministry of Education should develop and distribute a guideline regarding the usage of media.

Many schools tend to remain at this level. As an example, the case of Boreboa Primary School is shown below.

Table 3.5: Boreboa Primary School

<table>
<tr><td>School Name</td><td>Boreboa Primary School</td><td rowspan="2">Usage</td><td>2013</td><td>2014</td><td>2015</td></tr>
<tr><td>District (Province)</td><td>NCD</td><td>Not yet</td><td>Not yet</td><td>Stopped</td></tr>
<tr><td>No. of Stds & Trs</td><td colspan="5">2000 students and 38 teachers (approximately)</td></tr>
<tr><td>Usage</td><td colspan="5">DVD program was launched in the 2nd term in 2015, but currently stopped</td></tr>
<tr><td>Negative Factors</td><td colspan="5">✓ The number of Students is too big to adopt the TV program in the curriculum effectively. There are a total of 6 classes in G6, G7, and G8, and so it is impossible for all classes to use it in a week (Level 3)
✓ Almost all DVDs were stolen in 2014, and then the program was stopped (Level 2)
✓ Teachers prepare lessons by watching the DVD program (Level 4)
✓ Teachers who had used TV program are utilizing TRB and SWB in their class, even without DVDs. Especially they are thinking that it is effective in mathematics (Level 4)
✓ As for science class, they find it necessary to use DVDs (Level 0)</td></tr>
<tr><td>Consideration</td><td colspan="5">✓ This school had passed the stage “Setting is ready” and “Start using” after installing TV screen, power supply, and media
✓ Despite this, the school stopped using because the DVDs were stolen. Seemingly the problem of TV setting (Level 0) caused them to stop using, but it actually is a problem of maintenance of TV setting (Level 2). Then it is necessary that the school should purchase DVDs again after establishing the management system of equipment and resources at the school</td></tr>
<tr><td colspan="3"> 
A large number of Students with a big space</td><td colspan="3"> 
Student taking a test in a library</td></tr>
</table>

3.2.4 Level 3: Resolution of Specific Issues

In order to transfer from the “Start Using” to “Keep Using” stage, schools should overcome their own specific issues. It is expected that schools would keep using after that school’s own specific issues were resolved by the school itself. The issues are various, such as teachers’ transfer or absenteeism, an increasing number of students (a high rate of students to TVs), small TV size, shortage of classrooms and printed materials, and resource material drain by teacher transfer etc.

The issues on this level basically should be supervised and resolved through the initiative of the school, while the Ministry of Education should indirectly provide support. Schools on this level face various issues. As an example, the case of Hahela Primary School is shown below.

Table 3.6: Hahela Primary School

School Name	Hahela Primary School	**Usage**	2013	2014	2015
District (Province)	Buka (ARoB)		Stopped	Stopped	Stopped
No. of Stds & Trs	800 students and 12 teachers (approximately)				
Usage	Stopped since 2012				
Negative Factors	✓ Although this school has 5 TV screens, each classroom doesn't have one TV, because the number of students rapidly increased. Considering the equity, this school stopped using. This school has a plan to buy additional TV screens and establish the system whereby each classroom has a TV screen (Level 3) ✓ There is a technical problem regarding a cable, in order to increase the number of classrooms (Level 3) ✓ Although this school stopped using, teachers consider TRB valuable and fully utilize it in order to prepare lessons (Level 4)				
Consideration	✓ This school is at the stage between "Start using" and "Keep using" ✓ Teachers recognize its effectiveness and utilize TRB (Level 4) ✓ Although now it is stopped owing to technical problems and shortage of TVs (Level 3) ✓ It is necessary that the school establish a system to resolve the technical problem by itself, as well as gradually increase the number of TV screens				

Student taking test

School with a big space

3.2.5 Level 4: Recognition of Effects

In order to step up from the "keep using" to "Utilizing thoughtfully" stage, it is better that teachers recognize the effectiveness and value of the program. The examples of effectiveness gained provided by teachers during the survey include "enhancement of teaching skills and subject knowledge", "improvement of students' achievement", "realization of adequate coverage of syllabus", and "pacing a lesson at an adequate speed" etc. At this stage, schools and teachers try to fully utilize the TV program in a flexible manner in school.

This level is based on the teachers' recognition and controlled at school level. However, the Ministry of Education should support and analyze the effect of the TV program and share the results with schools. Also, it is better to provide opportunities for schools to discuss the problems and their solutions, to recognize and share stories of effectiveness together. Schools at this level can be considered as successful cases. The case of Launakalana Primary School is described below.

Table 3.7: Launakalana Primary School

School Name	Launakarana Primary School	**Usage**	2013	2014	2015
District (Province)	Kwikila (Central)		Using	Using	Using
No. of Stds & Trs	300 students and 10 teachers (approximately)				
Usage	Currently using DVD program. Implemented several times a week in G8, G7, and G6				
Negative Factors	✓ This school has been using since 2012, with 4 TV screens and 4 DVD players ✓ The school received TRB/SWB with some teachers trained (Level 1) ✓ Teachers are helped by the TV program to teach subjects which are hard to understand. And students can follow a science experiment (Level 4) ✓ The TV screen is too small for students to clearly observe it. The school tried to read the TV program content, but needs bigger screens (Level 3) ✓ DVDs can be used to effectively give a lesson with pause and play. Teachers can explain in a timely manner or give time to solve problems (Level 4) ✓ When there is not enough funds for generator fuel, the school gathers the funds from teachers in a semi-obligatory form. But, it can be sustainable because power supply enables teachers to charges batteries and improve quality of life (Level 4)				
Consideration	✓ This school is at "Utilizing thoughtfully", passing "keep using" stage ✓ Although it has an issue of small screens (Level 3), teachers thoughtfully utilize it to overcome issues ✓ Also, teachers realize that the TV program enhances their own teaching skills and recognize the effectiveness to teach the subjects which are hard to understand. This will probably be one of the motivations to step up to "Utilizing thoughtfully"				

Implementation of TV lesson

Teachers taking test

3.2.6 Summary of Negative Factor Analysis

The past survey analyzed the negative factors, by categorizing "TV utilization management", "Material resources", "Training", and "Equipment Maintenance". In addition, this ELS clarified the causal relationship, by combining the negative factors with teachers' utilization stage. The following is the list of negative factors on each level.

Table 3.8: Negative Factors on Each Level

Level	Negative Factors
Level 0: Readiness of TV setting	No Power Supply, No TV screen, No media equipment
Level 1: Awareness of Teachers	Teachers did not attend training, Trained teachers are transferred, Materials are not delivered etc.
Level 2: Maintenance of setting	Unstable Power Supply (owing to blackout, shortage of fuel fee), Failure and Theft of TV screen or Equipment
Level 3: Resolution of specific issues	The factors depend on schools Example: Teacher transfer or absence from work, High rate of students per TV, Shortage of Materials, Drain of materials along with teacher transfer, High cost of DVDs etc.
Level 4: Recognition of Effects	Teachers' recognition of ineffectiveness of the TV program (But this factor is not identified in this survey.)

4. Trends in the EQUITV Dissemination in Provinces

4.1 Current Status of Surveyed Schools

4.1.1 EQUITV Program Dissemination Status

Table 4.1 shows the EQUITV program dissemination status of surveyed schools, as discussed in Chapter 3. This table deals with 33 schools, excluding Lontis school, which has only implemented the test.

Table 4.1: EQUITV Program Dissemination Status of Surveyed Schools

Prov.	# of Schools	Utilization		TV		Training		TRB		SWB		DVD	
		Using	%	Install	%	Attend	%	Hold	%	Hold	%	Hold	%
ARoB	6	3	50%	6	100%	4	67%	3	50%	0	0%	3	50%
CP	10	7	70%	10	100%	7	70%	7	70%	9	90%	10	100%
ESP	6	5	83%	5	83%	3*1	50%	2	33%	2	33%	6	100%
NCD	5	1	20%	5	100%	5	100%	4	80%	4	80%	4	80%
WHP	6	3	50%	6	100%	4*2	67%	3	50%	3	50%	3	50%
Total	33	19	58%	32	97%	23	70%	19	58%	18	55%	26	79%

*1: Based on school's answer. Project's record indicates that 6 schools attended training (100%).
*2: Based on school's answer. Project's record indicates that no schools attended training (0%).

In ARoB, the percentage of schools holding SWB is 0%. The schools might have answered so, because they think that SWB would be distributed to cover all students as Phase 1 (In this Phase, the number of distributed SWB is supposed to be only one). Actually, it is estimated that some schools still hold SWB of Phase 1. However, the availability of SWB is not admitted, without schools identifying that they are holding SWB. Then the result shows 0%, along with the school's answer.

Almost all schools have TVs, and more than half have printed material resources and DVDs. About 70% of schools attended training. It can be said that the dissemination status of EQUITV program is on track.

4.1.2 Budget for EQUITV Program

As Table 3.2 shows, 23 among 33 surveyed schools (about 70%) ensured the budget for EQUITV program. Given that stopped schools ensured it, it is estimated that SLIP including the budget for EQUITV is standardized as a result of the awareness campaign. Also, this number can be the lower limit and the budget is allocated from the government. Given these things, sustainability regarding the budget for EQUITV Program can be ensured.

4.2 Monitoring at District Level

4.2.1 Dissemination Status of Each District

The school education administration in PNG is controlled at district level and SOs conduct monitoring, head teachers' meetings, and workshops/training in each district. The dissemination status was surveyed by questionnaires or interviews at these kinds of events in which school-related people were gathered. As a result, data from 141 schools from 6 provinces was gathered as in Table 4.2 (the parameter of the calculation of percentage of utilization or material holding is basically the number of schools in which the data was gathered). This survey was implemented separately from the ELS, but it is valuable to discuss the dissemination of the EQUITV program, and therefore the result is described here.

Table 4.2: Dissemination Status of EQUIT Program at Each District

Prov.	Surveyed Number [1]	Utilization		TV		Training		TRB		SWB		DVD	
		Using	%	Install	%	Attend	%	Hold	%	Hold	%	Hold	%
NCD[*2]	38/38	21	55%	38	100%	38	100%	38	100%	38	100%	38	100%
Rigo[*2]	25/38	20	80%	24	96%	25	100%	25	100%	25	100%	25	100%
Kairuku[*3]	24/30	13	54%	21	88%	15	63%	24	100%	24	100%	24	100%
Kavieng[*4]	17/65	11	65%	58[*6]	89%	17	100%	17	100%	17	100%	10	59%
Namatanai[*4]	22/82	6	27%	35[*6]	43%	22	100%	14	64%	14	64%	22	100%
Rabaul[*5]	15/16	12	80%	15	100%	15	100%	10	67%	8	53%	14	93%
Total	141/231	83	59%	153	86%[*7]	94	91%	90	87%	88	85%	95	92%

*1: Surveyed number indicates interviewed number on left side and all number of schools on right side (Interviewed/All schools)
*2: Based on the interview and questionnaire survey on head teacher meeting (March - May, November 2015)
*3: Delivered materials and media at workshop. Other data is gathered by interview survey (November 2015)
*4: Data was gathered by questionnaire survey at Head Teacher meeting (August 2015) and interview with SO (November 2015)
*5: Data was gathered by questionnaire and interview survey at monitoring meeting (April-May 2015)
*6: Number of schools holding TV is gathered from SO (November 2015). Installation rate is to all schools of each district
*7: Each district has different calculation methods, and this figure is average of installation rate of 6 districts

There is a little dispersion, but the rate of DVD or materials deployment and TV installation was around 90%. This means that EQUITV program setting is almost ready. And actually almost 60% of schools are using EQUITV program.

4.2.2 Result of Interview with SO and Monitoring Meeting

In this ELS, interviews with SSO and SO, who accompanied school visits, were implemented to establish the current status of utilization at each school. Table 4.3 indicates the result of ARoB, ESP, and WHP, because interviews with SO in CP was not implemented due to SO's urgent business, and the head teachers' meeting gave more correct information about NCD. SO also has a difficulty in conducting monitoring of remote schools, and especially SSOs rarely visited those schools. Therefore the accuracy of the information is low and it should be regarded as just a reference. But SO answered "Unknown" to the schools that he/she did not know the status. SO answered "Using/Holding" to the schools that he/she knew the status with confidence. Therefore the following data can be regarded as the lower limit.

Table 4.3: Dissemination Status Based on Interview with SO

Prov.	Surveyed Number	Utilization		TV		Training		TRB		SWB		DVD	
		Using	%	Install	%	Attend	%	Hold	%	Hold	%	Hold	%
ARoB	39	19	49%	28	72%	14	36%	15	38%	12	31%	7	18%
ESP	149	36	24%	79	53%	108	72%	20	13%	15	10%	28	19%
WHP	84	23	27%	21	25%	24	29%	24	29%	24	29%	22	26%
Total	272	78	29%	128	47%	146	54%	59	22%	51	19%	57	21%

4.3 EQUITV Program Dissemination Trends in Each Province

Based on the data gathered as a result of various monitoring activities, the presumption of dissemination status of each province is conducted here. As Table 4.2 shows, the updated data of all schools in NCD has been already gathered on November 2015, and has been used as a definitive value. As for the other provinces, the sampling error[2] is calculated in Table 4.4, regarding the result of ELS and monitoring at district level, described in the above Chapters.

[2] Sampling Error is not calculated in NCD in which data of all schools was gathered. Also, in the case of 0% or 100%, sampling error is also not calculated

Table 4.4: EQUITV Utilization Status of Each Province

Prov. *1	Date	# of Schools	# of Sample	Utilization		TV installment		Training		TRB Holding		SWB Holding		DVD Holding	
				%	Sampl. Error	%	Sampl. Error	%	Sampl. Error	%	Sampl. Error	%	Sampl. Error	%	Sampl. Error
NCD	Nov	38	38	55%	-	100%	-	100%	-	100%	-	100%	-	100%	-
ARoB/EL	Aug	238	6	50%	±40%	100%	-	67%	±38%	50%	±40%	0%	-	50%	±40%
ARoB/Hr	Aug	238	39	49%	±15%	72%	±13%	36%	±14%	38%	±14%	31%	±13%	18%	±11%
CP/EL	Aug	130	10	70%	±28%	100%	-	70%	±28%	70%	±28%	90%	±18%	100%	-
CP/Hr	Nov	130	49	67%	±11%	92%	±6%	82%	±9%	100%	-	100%	-	100%	-
ESP/EL	Aug	270	6	83%	±30%	83%	±30%	50%	±40%	33%	±38%	33%	±38%	100%	-
ESP/Hr	Aug	270	149	24%	±5%	53%	±5%	72%	±5%	13%	±4%	10%	±3%	19%	±4%
WHP/EL	Aug	100	6	50%	±40%	100%	-	67%	±37%	50%	±40%	50%	±40%	50%	±40%
WHP/Hr	Aug	100	84	27%	±4%	25%	±4%	29%	±4%	29%	±4%	29%	±4%	26%	±4%
NIP/Hr	Aug	147	39	44%	±14%	63%	±13%	100%	-	79%	±11%	79%	±11%	82%	±11%
ENBP/Hr	May	160	15	80%	±20%	100%	±0%	100%	-	67%	±23%	53%	±25%	93%	±13%

*1: EL is end-line survey, Hr is hearing of monitoring at district level

(1) Provinces in which EQUITV Program Disseminates at a Good Pace

Based on Table 4.2, it is estimated that EQUITV program disseminates at a good pace in NCD, CP, NIP, and ENBP.

Firstly, in all schools of NCD, TV screens are installed, printed materials and DVDs are delivered, and teachers attended training sessions. Actually more than half of schools are using EQUITV. EQUITV Program in NCD will probably disseminate at a good pace.

As for NCD, EQUITV Program in CP disseminates at a good pace. Distribution of printed materials and DVDs is almost finished, and the training coverage is also high. The utilization rate will be more than 50%, even when it is estimated with the lower limit of sampling error. Comparing with NCD, there are a lot of remote schools in CP. Given that, this dissemination status deserves attention and should be regarded as a great achievement.

In NIP, some lawmakers supporting EQUIPTV are preparing the installation of TV screens and satellite broadcasting equipment in Kavieng district, where the provincial capital is, in 2015. As Table 4.2 shows, almost 90% schools have finished the installation of new equipment. In Namatanai district, lacking strong support from lawmakers, the EQUITV program setting becomes gradually ready, by implemented the project's activities such as printed materials and DVD deployment, or training implementation. This means that the EQUITV program utilization gathers momentum, and subsequently the readiness of level 0 stage is also on track. Further progress is also expected. For example, the utilization rate in Kavieng district was 59% in August, but achieved at 65% in November. In Namatanai district, the utilization rate is just around 30%, but the rate in NIP is around 50%. Given that, the possibility to be over 50% during the next year is high.

In ENBP, it is necessary to discount the dissemination trend, considering the fact that awareness campaigns were conducted in the previous phase and interviews were implemented in Rabaul (urban area). Even though the survey was implemented in May and the current status may be improved further, it is assumed that all rates such as utilization will be greater than 50%.

(2) Provinces in which EQUITV Program Dissemination has Some Challenges

In disseminating EQUITV Program in ARoB, ESP, and WHP, some challenges exist.

In ARoB, the TV installation rate is high and the utilization rate arrives at around 50%, while the training coverage and materials and DVD deployment rate is low. This result shows the dissemination trend in the whole province accurately because the result of ELS is basically correlated with the interview result. In ARoB, the provincial training has not been launched

because the training is not conducted at the initiative of the project. Further, the provincial education office will distribute DVDs to schools which finished the provincial training, and subsequently DVD distribution has been delayed. Schools that attended the training have teachers trained in the previous phase, and schools holding DVDs bought them from ELD through their own initiative. ARoB is the region which understands the program well, because of the experience in the previous phase. There are some lawmakers who actively contribute TV screens to schools and the physical setting of TV program ("Level 0" stage in Chapter 3) is smoothly improved. On the other hand, due to the independent movement of the region and the distance from the mainland, the activities collaborating with the nation and project (such as materials delivery and training attendance, "Level 1" stage in Chapter 3) have been delayed. Considering the readiness of the physical setting, it is expected that ARoB can disseminate the EQUITV Program equally with NCD and CP. With the push of the lawmakers, the utilization rate can be improved from August. However, it might be difficult for the utilization rate to be over 50%, because ARoB has a lot of schools on small islands, which will not start using the program without DVD deployment.

In ESP, it is estimated that there are some challenges relating to the deployment of materials and DVDs, and subsequently the utilization rate is low. As described previously, the accuracy of the result of interviews with SOs is low and it should be regarded as a reference, or the lower limit. But it must be judged that the deployment is not on track, considering the result of interviews with SOs and the ELS is the same. Meanwhile, the TV installation rate and training coverage achieved some positive results. For example, in the ELS, there were some schools that had not attended to the training because trained teachers were transferred. If these schools were excluded from the analysis, the training coverage in the ELS would become 100%. It can be judged that the training implementation is on track, even considering the interview results. TV screens have also been installed at a good pace. Given that the number of schools is very large and there are some remote schools (such as Sepic River areas, which is not accessible without a boat), it should be positively evaluated that the TV installation rate will be around 50%. It is a little hard to judge the utilization rate, because the ELS result is the opposite to the interview result. However, the result of interviews with SOs will be closer to the truth, considering the number of the sample. That is to say, the utilization rate will be around 30%, even at the higher estimate. Comparing with the TV screen dissemination or training implementation status, the utilization rate is not high enough. The insufficient deployment of printed materials can function as a negative factor, and the situation should be investigated in detail.

As for WHP, the result of the ELS is different to the result of interviews with SOs, but it can be concluded that the dissemination has not been progressed. This is caused by the fact that the project activities were hampered by the change of provincial education director and SOs. When high level people were changed, the activity implementation plan was reset and delayed. Training of provincial trainers was finished, but trainings for schools had not been progressed. Some schools that attended the training have the provincial trainers, or teachers who attended training in the previous phase. WHP is the region in which TV screens were provided through Japan's Grant Assistance for Grassroots Projects, but even then the readiness of TV setting (Level 0) is not on track. These kinds of human resources might be transferred to the schools whose setting of the TV program is ready, and the TV program might be started by chance. Meanwhile, the utilization of EQUITV program in new schools will not be progressed, owing to the delay of training implementation and material deployment. This means that the schools become polarized as several using schools and others. Considering the sample number, it is assumed that the result of interviews with SOs reflects the trend of the whole of WHP. Each indicator, such as the utilization rate, will be around 30%.

5. Effectiveness of EQUITV Program

5.1 Analysis of Teachers' Test

5.1.1 Correlation between Test Scores and Experience

This section studies how EQUITV program affects the teacher's academic performance. The project assumed that the longer use of EQUITV program may deliver higher academic performance of teachers. However greater teaching experience may be another factor for higher academic performance, too. To clarify the correlation of these factors and teachers' academic performance, correlation coefficients (Pearson's correlation coefficient) between the test scores of teachers and teaching years/EQUITV teaching years were calculated at first. Then the test of significance was carried out against the resultant figures to verify the existence of a correlation between the scores and the years of experience. The result is shown in Table 5.1.

Table 5.1: Correlation Coefficients between Test Score and Experience

	# of Samples	Pearson's correlation coefficient
Score and teaching years	157	0.01
Score and EQUITV teaching years	157	0.21**

** $p<.01$ (significant level of correlation)

The result above explains that there was no correlation between scores and teaching years. Meanwhile, a correlation of 1% significance level was confirmed between scores and EQUITV teaching years. This means that the academic performance of teachers does not depend on the teaching years in service; continuous use of EQUITV program contributes to the improvement of the academic performance of teachers. This result suggested carrying out further analysis by focusing attention on the years in EQUITV program experience, rather than the teaching years in service.

Following this the samples were divided into three groups by EQUITV teaching years ("No use", "Below 2 year experience: 2 yrs-" and "Over 3 year experience: 3 yrs+") for this comparative analysis. The EQUITV experienced group was again divided into two groups by length of EQUITV in service. As the median of the samples was 2 years, the teachers with EQUITV experience were divided into those with up to 2 years of experience and those with more than 3 years of experience. The composition of samples by length of EQUITV use, sex and province is shown in Table 5.2.

Table 5.2: Composition of Samples by Years in EQUITV Experience

Province	Total	Sex	Sub-total	3 yrs+	2 yrs-	No use
ARoB	24	M	7	5 (71.4)	0 (0.0)	2 (28.8)
		F	17	9 (52.9)	1 (5.9)	7 (41.2)
CP	39	M	20	3 (15.0)	9 (45.0)	8 (40.0)
		F	19	0 (0.0)	10 (52.6)	9 (47.4)
ESP	40	M	18	5 (27.8)	2 (11.1)	11 (61.1)
		F	22	5 (22.7)	3 (13.6)	14 (63.6)
NCD	26	M	7	0 (0.0)	3 (42.9)	4 (57.1)
		F	19	1 (5.3)	4 (21.1)	14 (73.7)
WHP	28	M	16	5 (31.3)	5 (31.3)	6 (37.5)
		F	12	1 (8.3)	3 (25.0)	8 (66.7)
Total	157	M	68	18 (26.5)	19 (27.9)	31 (45.6)
		F	89	16 (18.0)	21 (23.6)	52 (58.4)

*Figures in brackets represent composition ratio (%)

5.1.2 Result of the Test

The average percentages of correct answers (score) to test questions for teachers by EQUITV experience across all the surveyed schools are shown in Table 5.3. Gray-colored cells indicate the highest figure for each question.

Table 5.3: Test Results (Correct Answer Rate %)

Questions			Correct answer rate		
#	Subject	Type	3 yrs+	2 yrs-	No use
Q0101	Math	1	73.5%	47.5%	51.8%
Q0102	Math	1	76.5%	87.5%	68.7%
Q0103	Math	1	76.5%	80.0%	68.7%
Q0104	Math	1	67.6%	70.0%	63.9%
Q0105	Math	1	85.3%	70.0%	74.7%
Q0106	Math	1	82.4%	62.5%	62.7%
Q0107	Math	1	70.6%	50.0%	57.8%
Q0201	Math	1	55.9%	50.0%	51.8%
Q0202	Math	1	91.2%	97.5%	95.2%
Q0301	Math	2	44.1%	22.5%	26.5%
Q0302[3]	Math	1	-	-	-
Q0303	Math	2	88.2%	72.5%	75.9%
Q0401	Math	2	94.1%	95.0%	85.5%
Q0402	Math	2	70.6%	62.5%	53.0%
Q0501	Math	2	67.6%	37.5%	53.0%
Q0601	Math	1	79.4%	62.5%	80.7%
Q0602	Math	2	76.5%	55.0%	62.7%
Q0701	Math	2	79.4%	65.0%	47.0%
Q0801	Math	2	76.5%	77.5%	77.1%
Q0901	Math	2	47.1%	30.0%	34.9%
Q0902	Math	2	44.1%	30.0%	30.1%
Q1001	Science	1	64.7%	60.0%	62.7%
Q1002	Science	2	76.5%	57.5%	50.6%
Q1101	Science	1	70.6%	67.5%	81.9%
Q1102	Science	1	85.3%	82.5%	84.3%
Q1103	Science	2	2.9%	2.5%	8.4%
Q1201	Science	1	94.1%	97.5%	92.8%
Q1202	Science	2	73.5%	52.5%	65.1%
Q1301	Science	1	67.6%	70.0%	61.4%
Q1302	Science	1	85.3%	67.5%	84.3%
Q1401	Science	1	79.4%	62.5%	68.7%
		Math Total	**72.4%**	**61.3%**	**61.1%**
		Science Total	**70.0%**	**62.0%**	**66.0%**
		Basic	**76.8%**	**69.7%**	**71.3%**
		Application	**64.7%**	**50.8%**	**51.5%**
		Grand Total	**71.6%**	**61.5%**	**62.7%**

The result clearly shows that teachers with longer EQUITV experience performed better than others as the gray-colored cells are mostly found in the group with experience of more than 3 years. On the other hand, few gray cells are seen in the "No use" group. This fact indicates that the use of EQUITV program contributed to the acquisition and updating of knowledge through TV lessons.

[3] Printing error was confirmed and thus the question was eliminated from the analysis

5.1.3 Comparison of Teacher Score by EQUITV Experience

As the previous section describes, there may be differences between score and EQUITV teaching years, like last year's analysis. The Analysis of variance (ANOVA) method[4] (One-way ANOVA) was applied to confirm the statistical significance of scores. Then it was confirmed that the scores of teachers who had more than 3 years EQUITV experience were significantly higher than the "2 yrs-" and the "No use" groups in "Total", "Mathematics" and "Application" categories. Meantime, there was no significant difference in "Science" and "Basic" categories. The result is summarized in Figure 5.1.

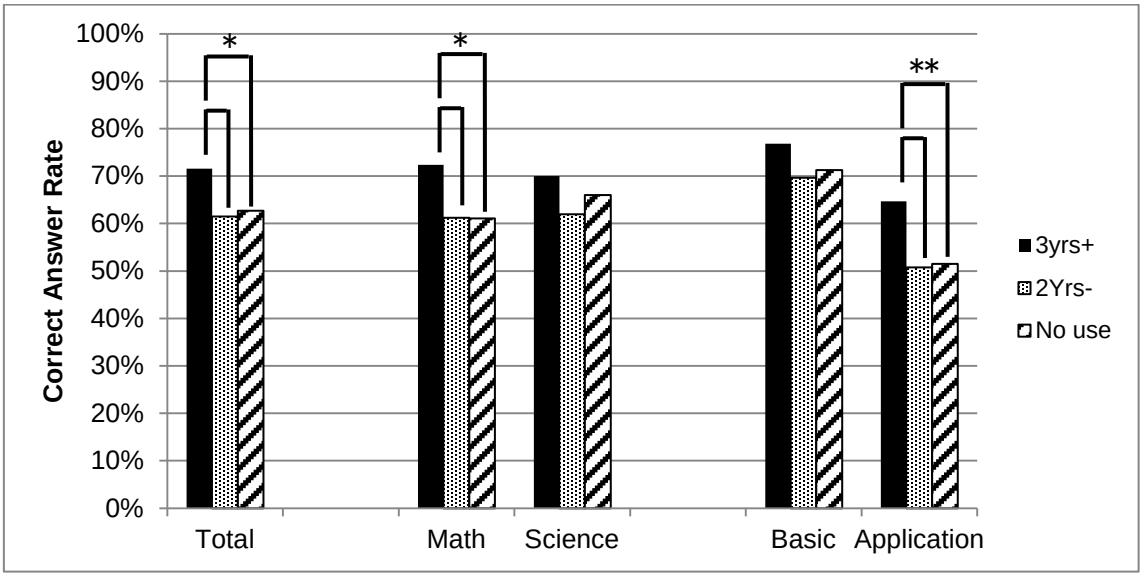

Figure 5.1: Comparison of Correct Answer Rate by EQUITV Utilization (Teachers)
(U shapes indicate differences with statistical significance: **p*<.05, ***p*<.01)

The ANOVA followed by Turkey's multiple comparative analyses is applied to identify the statistically significant difference between groups in all categories. The analytical result is outlined as:

Total: "3yrs+" group is significantly higher than "2 yrs-" and "No use" groups ($F(2, 154)= 4.44$, $p<.05$)
Math: "3yrs+" group is significantly higher than "2 yrs-" and "No use" groups ($F(2, 154)= 4.63$, $p<.05$)
Science: There was no significant difference confirmed ($F(2, 154)=1.99$, *n.s.*)
Basic: There was no significant difference confirmed ($F(2, 154)=1.73$, *n.s.*)
Application: "3yrs+" group is significantly higher than "2 yrs-" and "No use" groups ($F(2, 154)= 6.46$, $p<.01$)

The result implied that EQUITV program helped teachers to acquire advanced knowledge required for solving "Application" (difficult) questions. As mathematics included more "Application" questions than science, teachers who have used EQUITV program longer performed significantly better in mathematics, too. And the higher performance in "Mathematics" and "Application" may also differentiate the "Total" performance.

Regardless of the statistical differences, the performance of "3 yrs+" group was the highest in all categories, hence it can be concluded that EQUITV program is effective in improving the academic performance of teachers. It also implicates that the EQUITV program can be a useful method of in-service teacher training.

[4] Tests for statistical significance tell us what the probability is that the relationship we think we have found is only due to random chance. They tell us what the probability of error is in assuming a relationship exists

5.1.4 Distribution of Scores

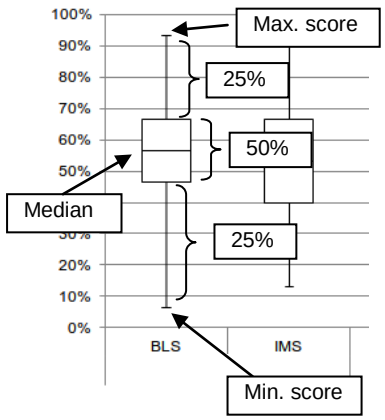

Figure 5.2: Box Plot Example

Distribution of the scores was extracted and plotted on a "box plot" in order to visually understand the distribution in samples of a statistical population. A box plot, or more precisely known as a "box and whisker plot", is used to graphically depict groups of numerical data with boxes and lines extending vertically from the boxes. The bottom and top of the boxes are the first and third quartiles of the samples, and the band inside the box is the second quartile (the median). The ends of the upper and lower lines outside of the boxes are the minimum and maximum of all of the data in this analysis, though lines can represent several possible alternative values depending on the objectives. Thus 50% of the population in samples is in the area of the box and 25% of population is distributed in between the upper/lower ends of the line and the edges of the box respectively as shown in Figure 5.2.

Figure 5.3 shows the box plots of the score distribution for each category in different EQUITV experience groups. It indicates that the upper 50% of "3 yrs+" teachers scored more than 80% even in "Science" and "Basic", which did not detect statistically significant differences as described in the previous section. In "2 yrs-" and "No use" groups, only 25% of teachers reached that level, thus the EQUITV program is considered to improve performance in "Science" and "Basic" as well.

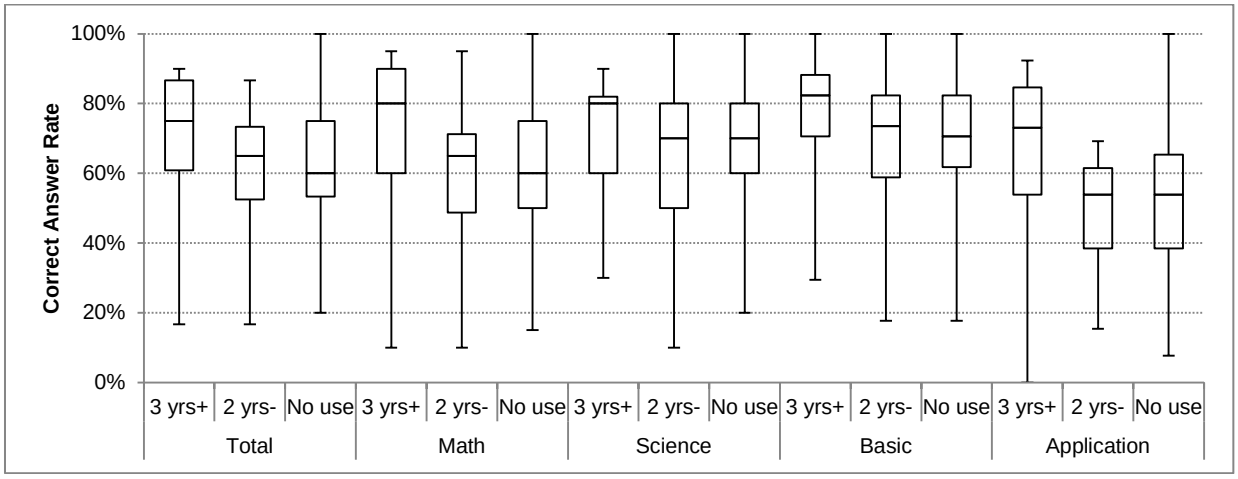

Figure 5.3: Distribution of Scores by Categories and EQUITV Experience

Although there were no significant differences observed between "2 yrs-" and "No use" groups in the statistical analysis, the above box plot indicates that the median in "2 yrs-" group is relatively higher overall. It implies that these teachers in "2 yrs-" group may improve their academic performance if they keep using EQUITV program hereafter.

5.2 Analysis of G8 Student Test

5.2.1 Classification of Samples

This section studies how EQUITV program affects the students' academic performance. Firstly the samples were divided into 2 groups; "Using" and "Stopped" groups based on the EQUITV

usage status of each school explained in Chapter 3. "Using" are the schools using EQUITV program, whereas "Stopped" are the schools which paused using EQUITV program as at the field study. Composition of samples that participated in the students' test is shown in Table 5.4.

Table 5.4: Composition of Samples in Student's Test

Using			Stopped		
Province	**School**	**Students**	**Province**	**School**	**Students**
WHP	1. Paiakona	12	ARoB	1. Elutupan	20
ESP	2. St Mary	20	ARoB	2. Hahela	28
CP	3. Allan Jones	6	ARoB	3. Tanamalo	9
CP	4. Moreguina	7	WHP	4. Bukapena	5
CP	5. Papa	17	WHP	5. Gihamu	11
CP	6. Toule	15	WHP	6. Mugand	13
ESP	7. Angoram	13	CP	7. Kerea	10
ESP	8. Marinumbo	12	NCD	8. Holy Rosary	23
ARoB	9. Kahule	12	NCD	9. St Francis	7
ARoB	10. Tahetahe	7	NCD	10. St Paul	12
ESP	11. Nindiwi	26	ESP	11. Kasmin	10
ESP	12. Passam	15	CP	12. Gohodae	9
CP	13. Gaire	13	NCD	13. Boreboa	25
ARoB	14. Malasang	20	CP	14. Ruatoka	9
			CP	15. Lebogoro	9
	Total	**195**		**Total**	**200**

Some exceptions existed in this classification. Ruaotoka and Lebogoro were classified into "Stopped" though they are now using EQUITV program. These schools have just started the program and the periods were not sufficient to benefit from it yet. Particularly, Lebogoro applied the program for G7 only thus EQUITV program never influenced G8 students who were the target of this study.

Malasang was determined as "Using" school, though its usage was different from others. Use of EQUITV program in Malasang was fully dependent on teachers and the frequency of use varied by class. However EQUITV program has been available for the past 2 years and thus it was considered that EQUITV influences could be observed. Gaire was classified as a "Using" school for a similar reason though it recently suspended the program due to the transfer of the teacher in charge of the TV. But the previous survey confirmed that Gaire has actively used EQUITV program for more than the past 2 years. G8 students have definitely gained benefit from the program.

5.2.2 Result of the Test

The average percentages of correct answers (score) to test questions for G8 students by EQUITV usage across all the surveyed schools are shown in Table 5.5. Gray-colored cells indicate the higher figure for each question.

Table 5.5: Test Results (Correct Answer Rate %)

Question			Correct answer rate	
#	Subject	Type	Using	Stopped
Q0101	Math	1	11.0%	9.6%
Q0102	Math	1	29.3%	17.5%
Q0103	Math	1	34.1%	30.6%
Q0105	Math	1	21.8%	17.9%
Q0107	Math	1	18.8%	17.5%
Q0201	Math	1	28.5%	25.4%
Q0202	Math	1	30.9%	25.4%
Q0303	Math	2	19.0%	22.5%
Q0401	Math	2	50.7%	45.0%
Q0402	Math	2	9.4%	8.6%
Q0601	Math	1	26.9%	28.0%
Q0801	Math	2	32.9%	32.1%
Q1001	Science	1	40.9%	35.2%
Q1002	Science	2	34.1%	35.6%
Q1101	Science	1	69.9%	62.2%
Q1102	Science	1	21.8%	16.5%
Q1103	Science	2	11.8%	14.8%
Q1201	Science	1	82.2%	79.4%
Q1202	Science	2	46.5%	42.8%
Q1301	Science	1	33.5%	34.4%
Q1302	Science	1	52.3%	50.5%
Q1401	Science	1	55.3%	48.3%
Math Total			**26.1%**	**23.3%**
		Science Total	**44.8%**	**42.0%**
		Basic Total	**37.2%**	**33.2%**
		Application Total	**29.2%**	**28.8%**
		Total	**34.6%**	**31.8%**

The gray cells appear mostly in “Using” group, thus students who have been using EQUITV program seemed to have better performance than students in “Stopped” schools. Particularly, the total scores of each category such as Total, Math, Science, Basic and Application are all higher than “Stopped” groups. The trends imply that EQUITV program contributes to academic performance improvement.

5.2.3 Comparison of Teacher Score by EQUITV Experience

The Analysis of variance (ANOVA) method (One-way ANOVA) was again applied to confirm the statistical significance of scores in G8 test. Then it was confirmed that scores of “Using” group in all categories except “Application” were significantly higher than that of the “Stopped” group as shown in Table 5.5.

The analysis supports the argument that EQUITV program contributes to improve the academic performance of students, the same as for teachers. Though the test analysis for teachers implied that the score differences were delivered by the difference of “Application” category, the score differences in G8 student test analysis seemed delivered by the difference of “Basic” category.

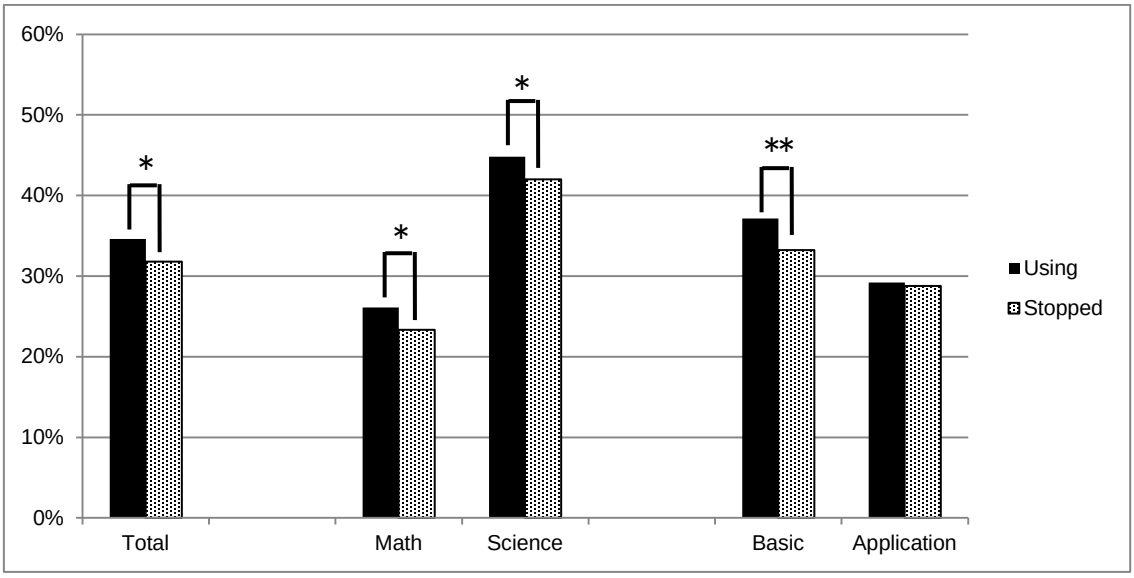

Figure 5.4: Comparison of Correct Answer Rate by EQUITV Usage
(U shapes indicate differences with statistical significance: *p<.05, **p<.01)

The ANOVA followed by Turkey's multiple comparative analyses is applied to identify the statistically significant difference between groups in all categories. The analytical result is outlined as:

Total: "Using" group is significantly higher than "Stopped" group (F(1, 917)= 5.96, p<.05)
Math: "Using" group is significantly higher than "Stopped" group (F(1, 917)= 4.41, p<.05)
Science: "Using" group is significantly higher than "Stopped" group (F(1, 917)= 5.21, p<.05)
Basic: "Using" group is significantly higher than "Stopped" group (F(1, 917)= 10.25, p<.01)
Application: There was no significant difference confirmed (F(1, 917)= 0.09, *n.s.*)

5.2.4 Distribution of Scores

Figure 5.5 shows the box plots of the score distribution for each category by EQUITV usage. Similar to the test analysis for teachers, 50% of the population in samples is in the area of the box and 25% of the population is distributed in between the upper/lower ends of the line and the edges of the box respectively.

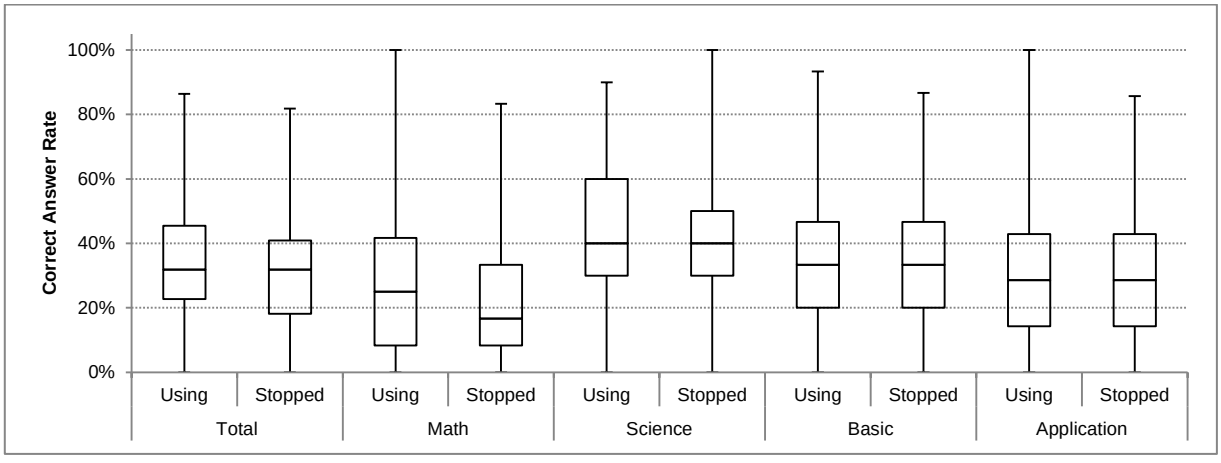

Figure 5.5: Distribution of Scores by Categories and EQUITV Usage

Some interesting facts can be extracted from the box plots. For instance, the maximum scores of "Using" group in all categories, except "Science", were higher, and the upper-level populations in "Using" group were relatively higher too. EQUITV program may provide benefit for upper scorers.

The bottom half of the population scored less than 20% in "Stopped" group in Mathematics which meant that schools which do not use EQUITV program accommodate a lot of "Slow Learners" in Mathematics. Generally speaking, Mathematics is the subject that easily produces slow learners and a "teacher-centered" lesson boosts this production. On the contrary, EQUITV program aims to deliver "learner-centered" lessons to realize Outcome Based Education (OBE). The plot implies that EQUITV program helps "slow learners" in particular in Mathematics.

In Science, the bottom half of the population was distributed in a similar manner in "Using" and "Stopped" groups, the upper-middle population in "Using" group was distributed in a higher range than "Stopped" group. As many teachers pointed out, the major advantages of EQUTIV program is to show experiments which are not available in remote schools. Such visual information may improve the performance of upper-middle students.

5.2.5 Result of Tracer Study

29 among 34 schools in this ELS have been involved in annual monitoring for 3 years, since 2013. Thus some of G8 students in these 29 schools have participated in this test for a successive 3 years since they were G6. Therefore the change in the academic performance of these students can be compared. The samples were classified as shown in Table 5.6 for this comparative analysis.

Table 5.6: Composition of Samples in Tracer Study

Using			Stopped		
Province	**School**	**Students**	**Province**	**School**	**Students**
WHP	1. Paiakona	12	AROB	1. Elutupan	20
ESP	2. St Mary	20	AROB	2. Hahela	28
CP	3. Allan Jones	6	AROB	3. Tanamalo	9
CP	4. Moreguina	7	WHP	4. Bukapena	5
CP	5. Papa	17	WHP	5. Gihamu	11
CP	6. Toule	15	WHP	6. Mugand	13
ESP	7. Angoram	13	CP	7. Kerea	10
ESP	8. Marinumbo	12	NCD	8. Holy Rosary	23
AROB	9. Kahule	12	NCD	9. St Francis	7
AROB	10. Tahetahe	7	NCD	10. St Paul	12
ESP	11. Nindiwi	26	ESP	11. Kasmin	10
ESP	12. Passam	15	CP	12. Gohodae	9
CP	13. Gaire	13	NCD	13. Boreboa	25
AROB	14. Malasang	20	CP	14. Ruatoka	9
			CP	15. Lebogoro	9
	Total	**195**		**Total**	**200**

Figure 5.6 graphically shows the change in the academic performance in 3 years by EQUTIV usage. Its descriptive statistics and result of 2-way ANOVA against 2 main factors such as the "EQUITV usage" and the "Grade" are also shown in Table 5.7. Values detecting statistically significant differences were followed by multiple comparative analyses (Bonferroni's method) to identify the detailed disparities.

The analysis identified that the scores in all categories have been improved significantly regardless of EQUITV usage. It means all scores were surely higher than the previous year. In Mathematics, marginal interaction was detected and the multiple comparative analysis found that the score of "Using" group in G7 was significantly higher than that of "Stopped" group.

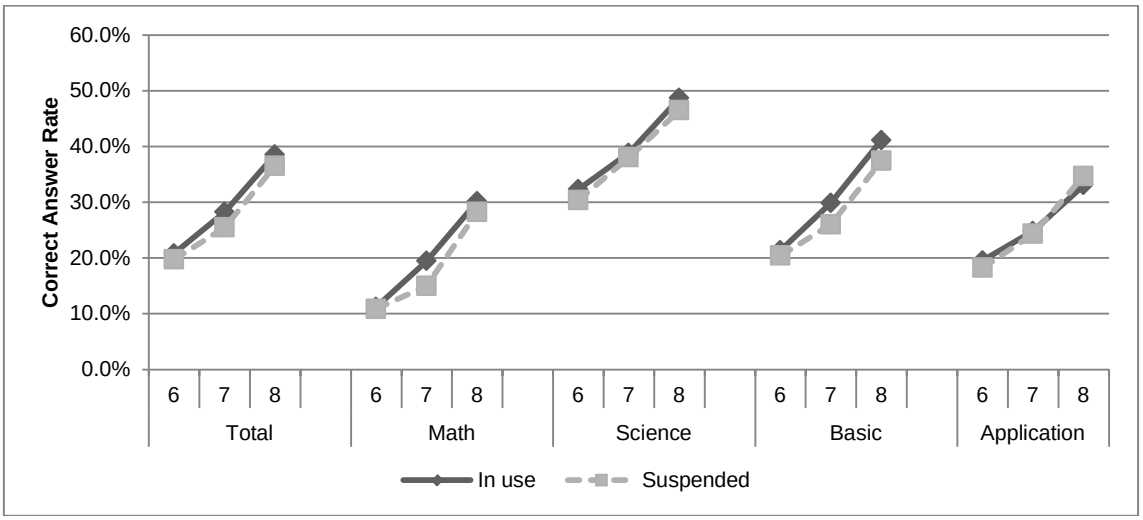

Figure 5.6: Change in Academic Performance in 3 Years

Table 5.7: Result of 2-way ANOVA for Tracer Study

	Using			Stopped			*F* value			Simple
	G6	G7	G8	G6	G7	G8	Usage	Grade	Interaction	main effect
Total	20.8%	28.3%	38.6%	19.8%	25.5%	36.6%	2.68	302.82**	0.75	G8>G7>G6
Math	11.2%	19.4%	30.1%	10.9%	15.0%	28.3%	2.93+	233.76**	2.97+	G7:Using>Stopped G8>G7>G6
Sci	32.3%	38.8%	48.7%	30.4%	38.1%	46.5%	1.45	133.04**	0.28	G8>G7>G6
Basic	21.4%	29.9%	41.1%	20.4%	26.0%	37.4%	5.23*	256.94**	2.01	Using>Stopped G8>G7>G6
Appli	19.5%	24.8%	33.1%	18.3%	24.3%	34.7%	0.00	106.76**	1.07	G8>G7>G6

+$p<$ .1, *$p<$ .05, **$p<$ .01

In "Basic" category, a significant difference in "EQUITV usage" factor was detected and the scores of "Using" group overall were higher than that of "Stopped" group. Though the trends on score change in 3 years were similar in the two groups, performance of "Using" group seemed to be better than "Stopped" group.

6. Influence of EQUITV Program on Teacher's Awareness

6.1 Composition of Samples

This chapter studies the self-awareness of teachers towards a lesson. Data was collected through questionnaire survey. The questionnaire used the Likert scale (1: Totally disagree - 7: totally agree) for responses. The analysis grouped teachers based on EQUITV experience like the analysis of the teacher test ("Over 3 years", "Less than 2 years" and" No use"). The aggregated scores were tested using the ANOVA method. Similar questions were compiled in the same categories as the BLS reports in order to extract useful implications. Table 6.1 shows the composition of the samples.

Table 6.1: Composition of Samples in Teacher Questionnaire

Province	Total	Sex	Sub-total	3 yrs+	2 yrs-	No use
ARoB	23	M	7	6 (85.7)	0 (0.0)	1 (14.3)
		F	16	9 (56.3)	4 (25.0)	3 (18.8)
CP	35	M	17	3 (17.6)	9 (52.9)	5 (29.4)
		F	18	1 (5.6)	8 (44.4)	9 (50.0)
ESP	40	M	18	6 (33.3)	1 (5.6)	11 (61.1)
		F	22	6 (27.3)	4 (18.2)	12 (54.5)
NCD	35	M	7	1 (14.3)	1 (14.3)	5 (71.4)
		F	28	2 (7.1)	8 (28.6)	18 (64.3)
WHP	28	M	17	3 (17.6)	3 (17.6)	11 (64.7)
		F	11	1 (9.1)	2 (18.2)	8 (72.7)
Total	161	M	66	19 (28.8)	14 (21.2)	33 (50.0)
		F	95	19 (28.8)	26 (27.4)	50 (52.6)
			161	38 (23.6)	40 (24.8)	83 (51.6)

*Figures in brackets represent composition ratio (%)

The past survey found some questions were inappropriate for this comparison as most teachers answered "totally agree" regardless of EQUITV experience. These questions were eliminated from the end-line questionnaire (thus missing question numbers are appeared in the following analysis).

6.2 Self-awareness on Lesson Preparation

Figure 6.1 shows the result of the teacher's self-awareness on lesson preparation. No questions detected a statistical difference on scores by EQUITV experience. However as the figure shows, "3 yrs+" group achieved the highest scores in most questions. This trend implies that the teachers who have rich EQUITV experience work harder in lesson preparation. As many teachers pointed out that DVD enhanced lesson preparation quality in this survey, the expansion of DVD use seemed to improve teachers' awareness towards lesson preparation in general.

On the other hand, Q205 "I develop teaching aids if such materials are not available at my school" shows a different trend, that teachers with EQUITV experience achieved lower scores than teachers with no EQUITV experience. This result implies that EQUITV program mitigates workloads for teaching material development as the TV program delivers quality lesson contents automatically. This may be a sign of producing "lazy" teachers, as past project activities found the issue that some teachers heavily relied on the TV program so that they just showed the TV lesson without any instruction. EQUITV training should therefore be reconsidered to emphasize again that EQUITV program is a tool for assisting teaching and never replaces the teacher's role.

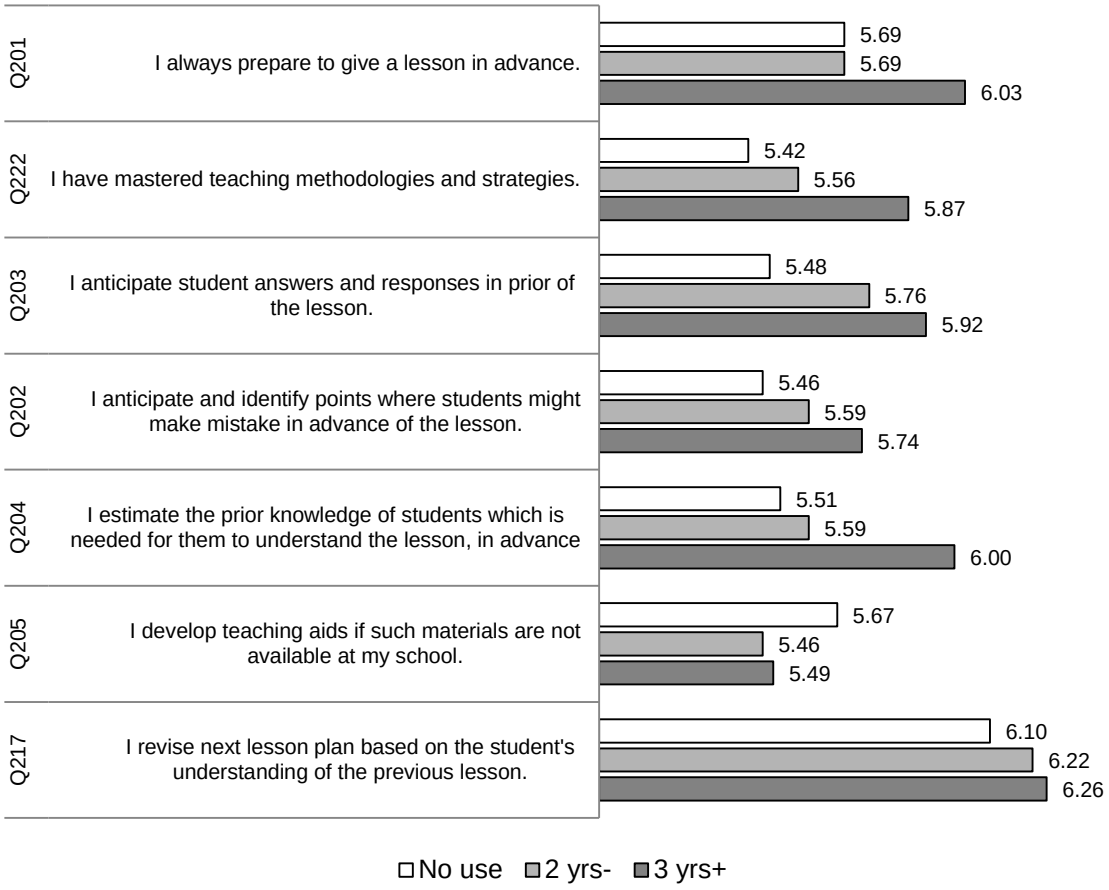

Figure 6.1: Result of Teacher's Self-awareness on Lesson Preparation

6.3 Self-awareness on Student-Centered Teaching Practice

Figure 6.2 shows the result of the teacher's self-awareness on teaching practice. These questions were designed to assess degrees of student-centered lesson practice in particular. A statistically significant difference was detected in Q213 ($F(2,147)=3.78$, $p<.05$) and marginal differences were confirmed in Q208($F(2,152)=2.52$, $p<.1$) and Q223($F(2,150)=2.86$, $p<.1$). Then the multiple comparative analyses found that scores of "3 yrs+" group were higher than that of "No use" group in these questions. Other questions also tended to show a higher score in EQUITV experienced teachers, although statistical differences were not found. This implies that the teachers with longer EQUITV experience practice "Student-centered" lesson more.

On the contrary, teachers who do not have EQUITV experience did not achieve the highest scores among these questions at all. Since the scores of "No use" teachers were nearly 6 ("Agree" in Likert scale) in most questions, the degree of student-centered lesson practice for "No use" teachers cannot be said to be "low", their self-awareness was modestly compared to the EQUTV teachers who were "confident" on student-centered lesson practice.

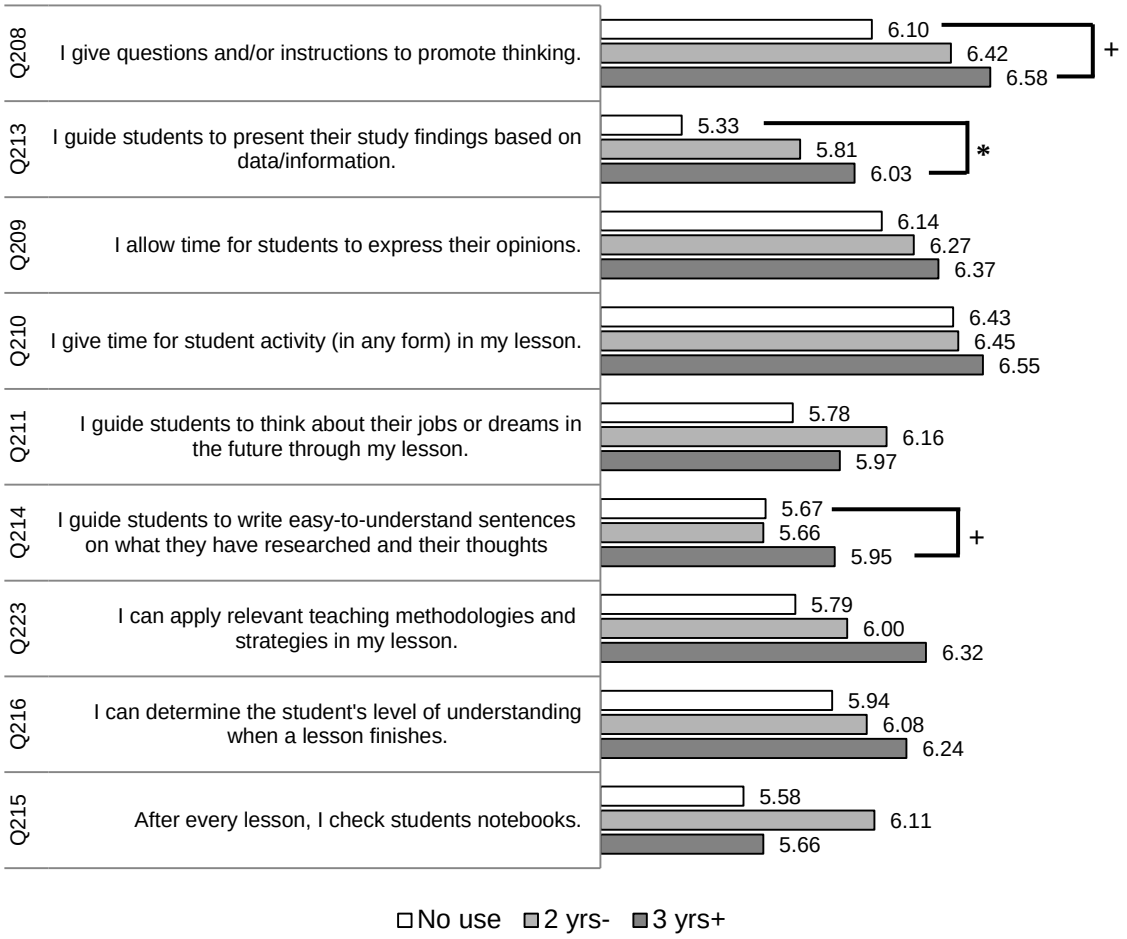

Figure 6.2: Result of Teacher's Self-awareness on Teaching Practice
(U shapes indicate differences with statistical significance: +p<.1, *p<.05)

6.4 Perception on Teaching

Figure 6.3 shows the result of the teacher's perception on teaching or education. A statistically significant difference was detected in Q236 (F(2,140)=5.27, p<.01) and Q237 (F(2,141)=3.39, p<.05). Then the multiple comparative analyses found that the scores of "3 yrs+" group were significantly lower than that of the other two groups.

In Q236 "A good teacher appoints students who can give a correct answer in a lesson", scores of "No use" and "2 yrs-" group were nearly "4" (meaning "Neutral" in Likert scale), whereas teachers in "3 yrs+" group were obviously negative towards appointing students who can give a correct answer. Teachers with longer EQUITV experience may recognize that students who CANNOT give a correct answer are also or even more important than others.

In Q237 "A good teacher spends sufficient time explaining", the score of "3 yrs+" group is lower than others. The score itself is "5.46" and is "partially agree" in the Likert scale, they were positive on this question like others. But teachers with longer EQUITV experience seemed to prioritize less time for explanation and they would allocate more time for other activities in their lesson.

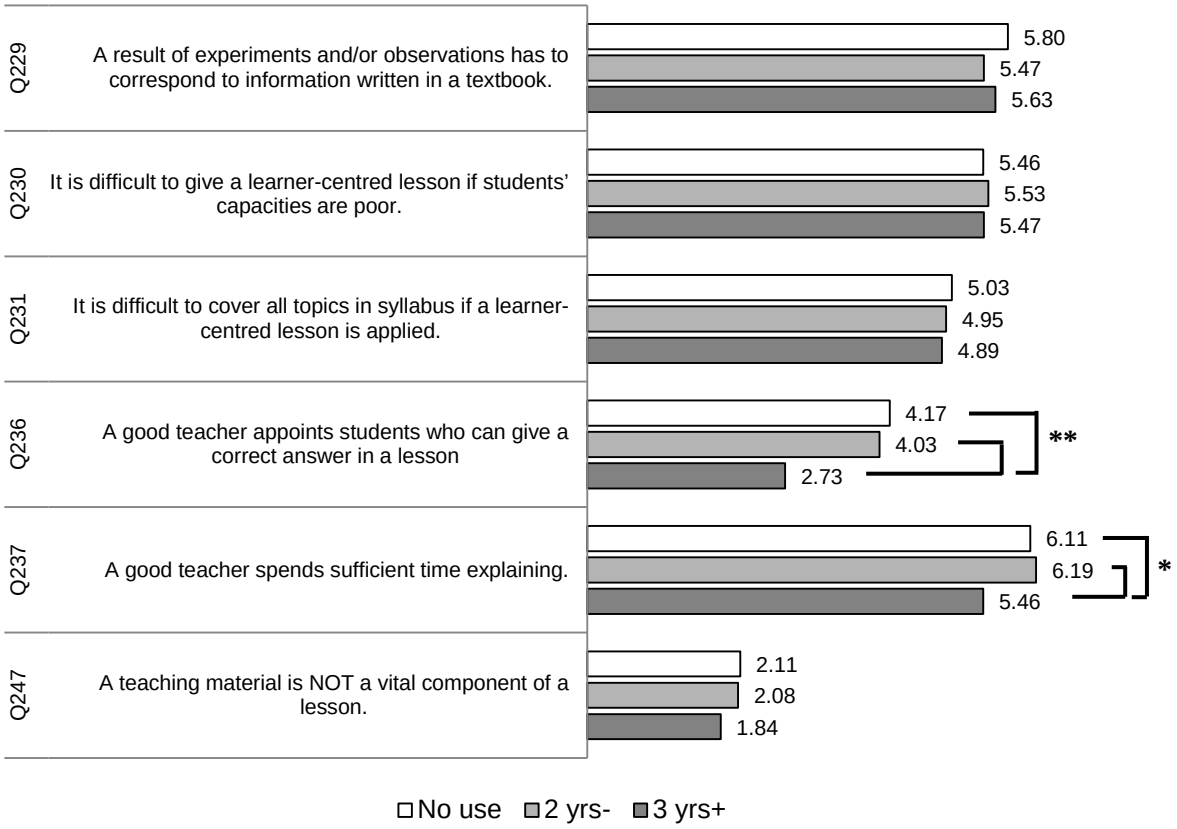

Figure 6.3: Result of Teacher's Perception on Teaching
(U shapes indicate differences with statistical significance: **p*<.05, ***p*<.01)

6.5 Perception on Students

Figure 6.4 shows the result of the teacher's perception on students. A statistically significant difference was detected in Q240 ($F(2,134)=3.38$, $p<.05$). Then the multiple comparative analyses found that the score of "No use" group was significantly higher than that of "2 yrs-" group.

Q240 "Performance of student is assessed by examination" and Q241 "Performance of student is assessed by what they say" are pair questions so that the discussion about the above result is better if it refers to scores for both questions. The comparison of scores between the two questions suggests that teachers in "No use" group put more priority on examinations than what students say for the student assessment. On the contrary, teachers in "2 yrs-" group prefer to assess students by what they say rather than examinations. Teachers in "3 yrs+" group evenly weigh examination and what students say for assessment.

Prioritizing examinations is a traditional perception for student assessment in general. These findings imply that EQUTIV program breaks such stereotypes, as TV lessons aim to deliver student-centered lessons which support students' learning. Teachers in "2 yrs-" group may be extremely influenced by the program at first and therefore pay much attention to student behaviors. Teachers having further EQUITV experience gradually develop better perspective for a balanced assessment to support students' all round development.

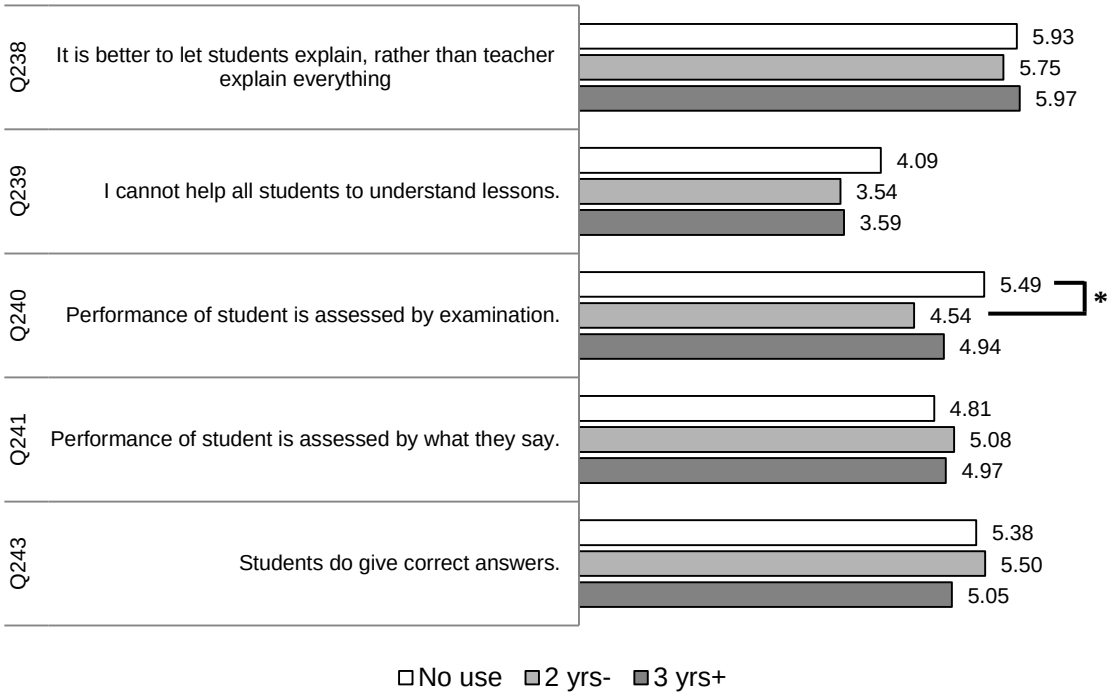

Figure 6.4: Result of Teacher's Perception on Students
(U shapes indicate differences with statistical significance: **p*<.05)

6.6 Summary of the Findings

Changing teachers' self-awareness or "mind-set" is difficult in general. However, the study in this chapter reveals that there were many disparities confirmed regarding teachers' self-awareness, between teachers with sufficient EQUITV experience, and those without it. These disparities can be explained by considering major characteristics of EQUITV program such as "student-centered lesson", "variety of teaching strategies use" and "teacher as a facilitator to promote active student learning". One of the advantages of EQUITV program is to demonstrate the "concrete lesson example" which requires receiving teachers to practice the same as the TV lesson. This advantage prompted the change of teachers' mind-set. The study also explained that the change is toward a preferable direction. It highlights the potentiality of EQUITV program as a teacher training method which enhances the capacity of teachers both academically and mentally.

7. Summary of the Findings and Recommendations

7.1 Major Findings of the End-Line Survey

The EQUITV program can be promoted effectively by considering the following factors:

Maintaining physical environment to accommodate EQUITV program

- ✓ Proper installation and management of electric power source (power line, generator or solar battery)
- ✓ Ensuring access to EQUITV media (Aerial antenna, satellite dish, decoder, DVD player and TV lesson recorded DVDs)

Leadership by school leaders for proactive EQUITV program use

- ✓ Active participation in EQUITV training by head teachers, teachers and school management board members
- ✓ School management board members understand and value EQUITV program
- ✓ Continuously expense cost for electricity or fuel for generator
- ✓ Quick action by school leaders for the repair when equipment is broken
- ✓ Teachers with proper subject knowledge and sufficient skills for EQUITV use
- ✓ Proper deployment of Teacher Resource Book (TRB) and Student Work Book (SWB)

Effective administration to sustain EQUITV use

- ✓ Further improvement of physical environment for EQUITV use (i.e. purchasing TV screens for all classrooms, building secure cabin for generator etc.)
- ✓ Bulk purchasing of fuel by oil drum to save cost or to avoid power outage
- ✓ Active EQUITV promotion during monitoring or head teachers' meeting by standard officer and EQUITV coordinator
- ✓ Active EQUITV promotion though radio programs by provincial officers

EQUITV program dissemination status varies by province. Current dissemination status of each province is summarized in Table 7.1 below.

Table 7.1: Current Status of EQUITV Dissemination by Province

Province	Current Status of EQUITV Dissemination
ARoB	TV installation rate is high, but training coverage is low. Access to media is not ensured yet in many schools due to delay of DVD distribution, as PEO decided sending DVDs after all training completed
CP	Equipment installation, media access, training and TRB/SWB distribution are all on track. Further promotion to prompt proactive and continuous EQUITV use is expected
ENBP	Equipment installation, media access, trainings and TRB/SWB distributions are all on track. Program is being promoted by SOs through radio which boosts purchase of equipment and active EQUITV use. Further promotion to prompt proactive and continuous EQUITV use is expected
ESP	TV installation, training are on track, but TRB/SWB/DVD distributions are being delayed. Many schools have not started EQUITV program yet
NCD	Equipment installation, media access, training and TRB/SWB distributions have been completed. Further promotion to prompt purchasing extra TV screens as large schools are dominant in this area, that need more TV screens for multi-streaming
NIP	Equipment installation, media access, training and TRB/SWB distribution are all on track. Further promotion to prompt proactive and continuous EQUITV use is expected
WHP	Several replacements of provincial education responsible officials have delayed EQUITV promotion. All actions such as TV installation, media access, training and TRB/SWB distributions are not on track

EQUITV program dissemination is steady overall. The ELS also confirmed that schools which have sustained EQUITV program properly performed better than schools without EQUITV program. Academic performance of teachers and students was higher and self-awareness of teachers was more preferable in these schools. The ELS concludes that EQUITV program has definitely contributed to improve education in Papua New Guinea qualitatively and quantitatively. National education media policy which promotes EQUITV program nationwide should not be stopped.

7.2 Recommendations on Further EQUITV Program Dissemination

Through the ELS, the causal relationship of negative factors was schematized in Figure 3.1, according to the utilization stage of TV program. This relationship diagram clarifies the important negative factors, based on the utilization status, and the challenges each school faces. As described previously, it is expected that this diagram contributes to clarifying the responsible authority regarding the resolution of the negative factors.

With this diagram, recommendations on further EQUITV program dissemination were summarized, in collaboration with members of the monitoring committee and other committees. Table 7.2 shows the summary (the original will be attached). It is better that the relationship diagram and the recommendations should be shared by relevant people to gain common recognition, through training and so on.

Table 7.2: Recommendations on Further EQUITV Program Dissemination

Level	Fact/Issues	Recommendation
Lv. 0	Schools did not install three basic items (Electricity, TV, and Medium [DVD and Broadcast Program])	✓ ELD reviews National Dissemination Plan (NDP) and provincial education office reviews provincial dissemination plan yearly ✓ ELD conducts awareness campaign to clarify roles of stakeholders on EQUITV program, for schools to have access to TV sets (TV equipment, DVDs, Satellite equipment, Gen-set, etc.)
Lv. 1	Provincial Government did not deliver TV materials Huge cost of deployment of resource materials	✓ ELD identifies distribution status of distribution of material and number of required books ✓ ELD informs and follows up distribution status to provinces and SOs ✓ ELD considers delivering soft-copy of TRB, SWB, and DVD
	No training in schools	✓ ELD instructs provincial government to ensure all schools received training ✓ Provincial Government conducts and monitors district, cluster, and school-based training ✓ ELD and TED strength implementation of EQUITV module at PTCs
	School teachers do not use TV program despite having complete equipment, materials, and training	✓ ELD and Provincial Government including SOs conduct follow up awareness campaigns and monitoring for schools
Lv. 2	Schools stopped utilizing TV program due to; - Inconsistent Electricity - Stolen Equipment - Private use and misuse of Equipment - Equipment fault	✓ Schools must manage consistent power for TV program ✓ Schools and stakeholders purchase solar power system ✓ Improve school security measures ✓ Schools develop equipment management guidelines and system ✓ SOs conduct monitoring of EQUITV Program during school visits ✓ ELD and Provincial Government develop the school support system regarding equipment problems

Level	Fact/Issues	Recommendation
Lv. 3	Schools stopped use of EQUITV program due to specific issues	✓ ELD obtains feedback and shares good practices from successful schools to other schools ✓ Provincial Government, SOs, and ELD monitor the schools
	Shortage of SWB	✓ ELD should print and send SWB ✓ ELD considers alternatively measure to replace SWB
	Getting Tired of Contents	✓ ELD revises and develops resource materials and incentive videos for teachers
	High-Cost DVD Damage of DVD	✓ ELD considers to duplicate content for USB/HDD ✓ ELD considers to develop on-demand program (Internet) in the future.
	Trained teacher transfer	✓ Provincial Government considers avoiding transfer of the provincial / cluster trainers ✓ ELD develops and provides starter training kit
	Small number of TV screens Small TV screens	✓ ELD recommend the TV size and proper number of students per class for effective usage
	Leave of Teachers (absenteeism)	✓ School administrations organize and arrange to ensure the continuation of TV lessons during teacher absence and leave
	No proper building for TV room	✓ Utilize ordinary class for TV lesson ✓ ELD provide guidelines for proper TV classrooms to schools
Lv. 4	Almost all TV teachers recognize impact and benefits of EQUITV program	In order for teachers to continuously recognize benefits of TV program, boost the morale, and enjoy the TV program: ✓ ELD supports and develops EQUITV program and specific Pedagogical Content Knowledge training according to the needs and interest of teachers ✓ ELD provides EQUITV newsletter to inform and update EQUITV Program ✓ ELD organises awareness meeting at a district level ✓ Systematize EQUITV Program monitoring and supervision ✓ EDL recognizes the best TV lesson schools in the country ✓ ELD and CDD collaborate to develop TV program/material in line with syllabus and keep standardized and user-friendly program/material for teachers and students ✓ ELD introduces variety of media to support teachers to choose flexible teaching and learning according to the level of teachers/students and environment ✓ ELD conducts all department training through distance mode using EQUITV platform

Appendix A: Questionnaire (Head teachers)

EQUITV II: ELS For TV school Head teacher

24-L1

This questionnaire is to collect basic information regarding media education activities at your school to measure dissemination of TV lessons.

IMPORTANT: **Please note Head Teacher may fill this form with teachers responsible for TV lessons.**

Q.1 Respondent identification

1.1 School name	1.2 District	1.3 Province	1.4 Head teacher name and contact number	1.5 School level

Q.2 Prerequisites for implementing the EQUITV program (Fill out blank or tick the following questions)

2.1 How many TV screens does your school have? _____, powered by Genset❒, PNG Power❒ or Others❒ (tick one fits most)

2.2 Which mode of medium does your school use? (Tick one fits most) EMTV with Satellite❒, EMTV with antenna ❒, DVD player❒, or No Media to be used ❒

2.3 Which resource materials does your school use? (Multiple answers allowed) Teachers Resource Books❒, Students Workbooks❒, TV lesson DVDs ❒, or No resources ❒

2.4 Which type of EQUITV training do your school teachers receive? (Multiple answers allowed) Basic EQUITV training ❒, Advanced EQUITV training ❒, or No training ❒

Q.3 Current practice of media education activity at your school

Please choose one the situation appropriate to your school regarding EQUITV programme.

3.1 Never used but have a plan to implement it❒ Currently using TV lessons in our classes❒ We used it before but stopped for some reason❒ No use, no plan to implement it❒

If you have implemented the EQUITV, in which year/term did you start using in the first place and if stopped using, in which year/term did you stop last time?.

a) Started in year _____ 1st term❒ 2nd term❒ 3rd term❒, b) but Stopped in year _____ 1st term❒ 2nd term❒ 3rd term❒, or Currently using TV lessons❒

3.2 a) How many classes in your school in each grade? G6 _____ G7 _____ G8 _____

b) How often did you use TV lesson in average? (applicable for "Using" or "Stopped" only)

G6: 3-5times/week❒ 1-2times/week❒ a few times in month❒ a few times in term❒ Never❒

G7: 3-5times/week❒ 1-2times/week❒ a few times in month❒ a few times in term❒ Never❒

G8: 3-5times/week❒ 1-2times/week❒ a few times in month❒ a few times in term❒ Never❒

Continue to back page =>

Appendix A: Questionnaire (Head teachers)

EQUITV II: ELS For TV school Head teacher

24-L1

3.3 Tick following questions if applicable

a) Establish the EQUITV Program Committee in a school❒

b) Manage the class schedule to efficiently use the equipment (i.e. Rotation**,** Combining classes etc.) ❒

c) Receive sufficient support (i.e. Periodic monitoring) from the District. ❒

d) Create an equipment inventory for the EQUITV Program of our school own (i.e. Purchase additional TV sets) ❒

e) Set up solar power set / Purchase additional generator ❒

f) Ensure the school budget to continue using the EQUITV program ❒ (Specify the amount of budget for 2015. Kina_____)

g) Receive financial assistance from the community ❒ (Specify the amount of money received form community in 2014. Kina_____)

h) Conduct periodic inspection of equipment ❒

i) Repair TV equipment when it is broken ❒

j) Receive technical assistance from the community ❒

k) School-based collaborative teacher training about EQUITV Program (i.e. Lesson observation, Study group) ❒

m) There is no TV, Signal or DVD, and cannot watch TV lessons❒

n) Equipment is out of order.❒ (Genset❒ Satellite decoder❒ TV screen❒ Others❒ Tick one affects most)

o) Equipment was stolen.❒

p) Manage the class schedule to efficiently use the equipment is difficult.❒

q) Power Problem ❒

r) Non-TV lessons are enough for children's learning.❒

s) Not enough number of printed materials (Teachers Resource Book/Student Workbook)❒

t) No sufficient knowledge as to how to utilize TV lessons for learning.❒

u) Running cost is too much for school.❒

v) Not sure how TV lessons should be integrated into lesson plan.❒

w) There is a security risk for TV equipment.❒

x) Other problem.❒ (please describe _____)

Thank you very much for your time.

Appendix B: Questionnaire (Teachers)

EQUITV II ENDLINE SURVEY For Teachers

24-T1

This questionnaire is to collect basic information regarding media education activities at your school. The information provided by you will be use to improve the EQUITV program for better learning for children. This questionnaire is NOT for your professional performance assessment so please provide your honest information.

Q.1 Respondent identification

1.1 School name	1.2 District	1.3 Province
1.4 Teacther's Name	1.5 Sex Male❒ Female❒	1.6 Teaching Grade
1.7 Teaching Subject	1.8 How many years of teaching experience? _____ Years (please round months)	
1.9 Do you use TV programmes in your class? No❒ Previously Yes but stopped for some reasons❒ Yes, Currently use them in my class❒ 1.10 If currently or previously "Yes", in what year did you start it? Year _____ and how many years of TV teaching experience? _____ Years (pls round months) If stopped, when did you stop it? In Year _____ 1.11 If "Yes" then which media currently aree you using? EMTV❒ DVD❒		
1.12 Do you actually use EQUITV resource books (i.e. Teacher's Guide and/or Student Workbook) in your classes? No❒ Previously Yes but stopped for some reasons ❒ Yes, Currently use them in my class❒		
1.13 Have you received a training of EQUITV modules in your Cluster training (NIST) recently? No❒ Yes❒ in year ( )		

Q.2

	Please read each question and circle the number from 1 to 7 which best fits your situation.	Strongly Disagree	Disagree	Partially Disagree	Neutral	Partially Agree	Agree	Strongly Agree
2.1	I always prepare to give a lesson in advance.	1	2	3	4	5	6	7
2.2	I anticipate and identify points where students might make mistake in advance of the lesson.	1	2	3	4	5	6	7
2.3	I anticipate student answers and responses in prior of the lesson.	1	2	3	4	5	6	7
2.4	I estimate the prior knowledge of students which is needed for them to understand the lesson, in advance	1	2	3	4	5	6	7
2.5	I develop teaching aids if such materials are not available at my school.	1	2	3	4	5	6	7

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Appendix B**: Questionnaire (Teachers)**

EQUITV II ENDLINE SURVEY For Teachers

24-T1

Please read each question and circle the number from 1 to 7 which best fits your situation.		Strongly	Disagree	Partially	Neutral	Partially	Agree	Strongly
2.8	I give questions and/or instructions to promote thinking.	1	2	3	4	5	6	7
2.9	I allow time for students to express their opinions.	1	2	3	4	5	6	7
2.10	I give time for student activity (in any form) in my lesson.	1	2	3	4	5	6	7
2.11	I guide students to think about their jobs or dreams in the future through my lesson.	1	2	3	4	5	6	7
2.13	I guide students to present their study findings based on data/information.	1	2	3	4	5	6	7
2.14	I guide students to write easy-to-understand sentences on what they have researched and their thoughts	1	2	3	4	5	6	7
2.15	After every lesson, I check students notebooks.	1	2	3	4	5	6	7
2.16	I can determine the student's level of understanding when a lesson finishes.	1	2	3	4	5	6	7
2.17	I revise next lesson plan based on the student's understanding of the previous lesson.	1	2	3	4	5	6	7
2.22	I have mastered teaching methodologies and strategies.	1	2	3	4	5	6	7
2.23	I can apply relevant teaching methodologies and strategies in my lesson.	1	2	3	4	5	6	7
2.28	A student should solve problems as instructed by teacher.	1	2	3	4	5	6	7
2.29	A result of experiments and/or observations has to correspond to information written in a textbook.	1	2	3	4	5	6	7
2.30	It is difficult to give a learner-centred lesson if students' capacities are poor.	1	2	3	4	5	6	7
2.31	It is difficult to cover all topics in syllabus if a learner-centred lesson is applied.	1	2	3	4	5	6	7

Continue to Next Page ⇒

Appendix B**: Questionnaire (Teachers)**

EQUITV II ENDLINE SURVEY For Teachers

24-T1

Please read each question and circle the number from 1 to 7 which best fits your situation.		Strongly Disagree	Disagree	Partially Disagree	Neutral	Partially Agree	Agree	Strongly Agree
2.36	A good teacher appoints students who can give a correct answer in a lesson	1	2	3	4	5	6	7
2.37	A good teacher spends sufficient time explaining.	1	2	3	4	5	6	7
2.38	It is better to let students explain, rather than teacher explain everything	1	2	3	4	5	6	7
2.39	I cannot help all students to understand lessons.	1	2	3	4	5	6	7
2.40	Performance of student is assessed by examination.	1	2	3	4	5	6	7
2.41	Performance of student is assessed by what they say.	1	2	3	4	5	6	7
2.43	Students do give correct answers.	1	2	3	4	5	6	7
2.47	A teaching material is NOT a vital component of a lesson.	1	2	3	4	5	6	7

Continue to Next Page ⇒

Appendix B**: Questionnaire (Teachers)**

EQUITV II ENDLINE SURVEY For Teachers

24-T1

Q.3

Please read each question and circle the number from 1 to 7 which best fits your situation. **The following questions are to be answered by** • **Teachers who have <u>TV teaching experience</u>.** • **If you are using DVD version please answer based on the experience.** • **Thoes who using EMTV programmes please answer based on that.**		Strongly Disagree	Disagree	Partially Disagree	Neutral	Partially Agree	Agree	Strongly Agree
3.01	Controlling the pace of TV lessons is not easy.	1	2	3	4	5	6	7
3.02	The pace of TV lessons is adequate for children.	1	2	3	4	5	6	7
3.03	Accommodating TV lessons into my lesson schedule is not easy.	1	2	3	4	5	6	7
3.04	Care required for TV lessons sometime discourage use of TV lessons	1	2	3	4	5	6	7
3.07	Standard officer is informative enough to resolve problems regarding TV lessons.	1	2	3	4	5	6	7
3.10	Controlling the pace of TV lessons is no different from that of ordinary lessons	1	2	3	4	5	6	7
3.13	Care required for TV lessons is not much different from that of ordinary lessons.	1	2	3	4	5	6	7
3.14	Head teacher has enough leadership to implement TV lessons.	1	2	3	4	5	6	7

Thank you very much for your time.

Appendix C: Exam (Teacher)
EQUITV II ENDLINE SURVEY#2
Math/Science Test (for Teachers)

24-T2

BEFORE YOU START:

1. Time allowed for this test is **60** minutes.
2. This test contains thirty one (31) questions from Math and Science for you to answer.
3. Make sure you write your answer in an answer box or it will not be scored.
4. You can use blank space on the sheet to work out your answer.
5. If you decide to change your answer make sure that your answer is clear.
6. The result of this test is used for solemnly Project purpose only and does not affect any of your future professional careers so please answer honestly.

Name:	**School:**
Teaching subject	**Class:**
Sex: ❒ male ❒ female	**Province:**
Did you take this test last year? ❒ No ❒ Yes	

HOW TO WRITE YOUR ANSWER:

There are two type of question. One is a descriptive and other is a selective question. For the descriptive question you write value or word for the answer, for example;

Ans. 123.4

For the selective question, you will be given some possible answers, for example option ① to ④.

① Mammal
② Reptile
③ Plant
④ Insect

If you think ② is a correct answer, then write the number of option in the answer box like below;

Ans. 2

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Appendix C: Exam (Teacher)
EQUITV II ENDLINE SURVEY#2
Math/Science Test (for Teachers)

24-T2

1.1 How many years of teaching experience? _____ Years (please round months)

1.2 Do you use TV programmes in your class?

No ❒ Previously Yes but not now❒ Yes, currently use them in my classes❒

1.3 If "Yes" to above question (Q1.2), how many years of TV teaching experience? _____ Years (please round months)

Question: Calculate the following expressions from Q1.1 to Q1.7 and answer the value. DO NOT USE CALCULATOR.

Q1.1 $2436 \div 12$ **Ans.** ☐

Q1.2 $4.6 - 0.21$ **Ans.** ☐

Q1.3 84×3.6 **Ans.** ☐

Q1.4 $6\times4 - (8-5)\times3$ **Ans.** ☐

Q1.5 $\frac{3}{7} - \frac{2}{5}$ **Ans.** $\frac{\square}{\square}$

Q1.6 $\frac{4}{5} \div \frac{2}{3}$ **Ans.** $\frac{\square}{\square}$

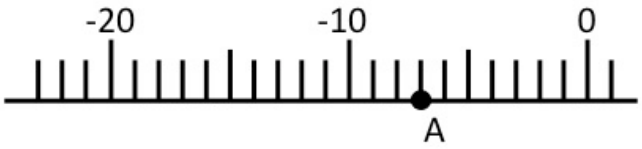
Q1.7 $6 - (-7)$ **Ans.** ☐

Question: Answer the following questions Q2.1 and Q2.2, and answer the value.

Q2.1 Find the lowest common multiple of 8 and 12.

Ans.for Q2.1

Q2.2 The following figure shows a part of a number line. Answer the number indicated by point A.



Ans.for Q2.2

Question: Answer the following questions from Q3.1 to Q3.3

Q3.1 Estimate the surface area of a two Kina note shown below. There are eight options under the figure 1. Which option is the closest to the exact one? Choose one option shown below and write the number of it.

Figure 1

① About 5 cm^2

②. About 1500 cm^2

③ About 40 cm^2

④ About 300 cm^2

⑤ About 800 cm^2

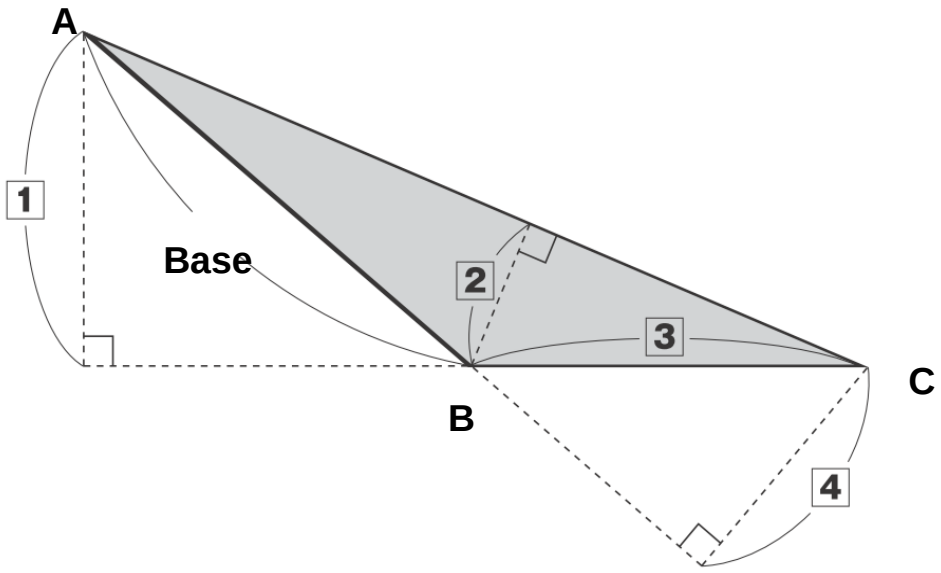
⑥ About 100 cm^2

⑦ About 2500 cm^2

⑧ About 1000 cm^2

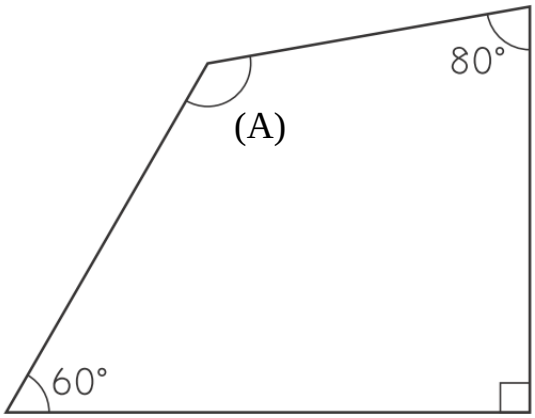
Ans.for Q3.1

Q3.2 Think how to calculate the area of the triangle ABC shown below.
When **the side AB** is the base, which is the height?
Choose one from the following options numbered **1** to **4**, and answer the number.



Ans.for Q3.2 ____

Q3.3 How many degrees is the angle (A) in the quadrilateral shown below? Write the answer.

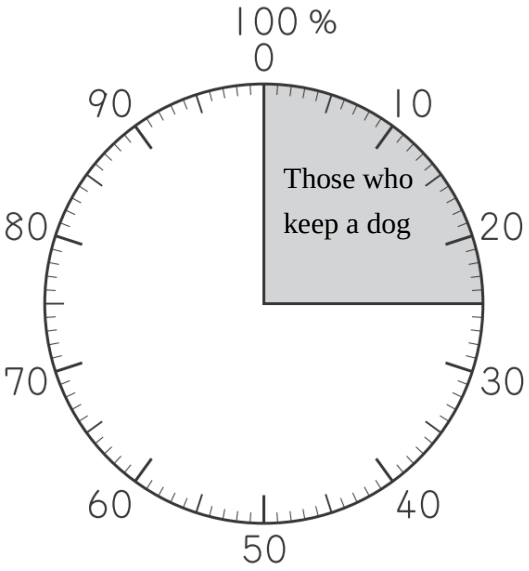


Ans.for Q3.3 ____ °

Question: Answer the question Q4.1 and Q4.2.

The pie chart shown below indicates the percentage of those who keep a dog at home among all class members.
The number of those who keep a dog is 8.

Percentage of those who keep a dog at home



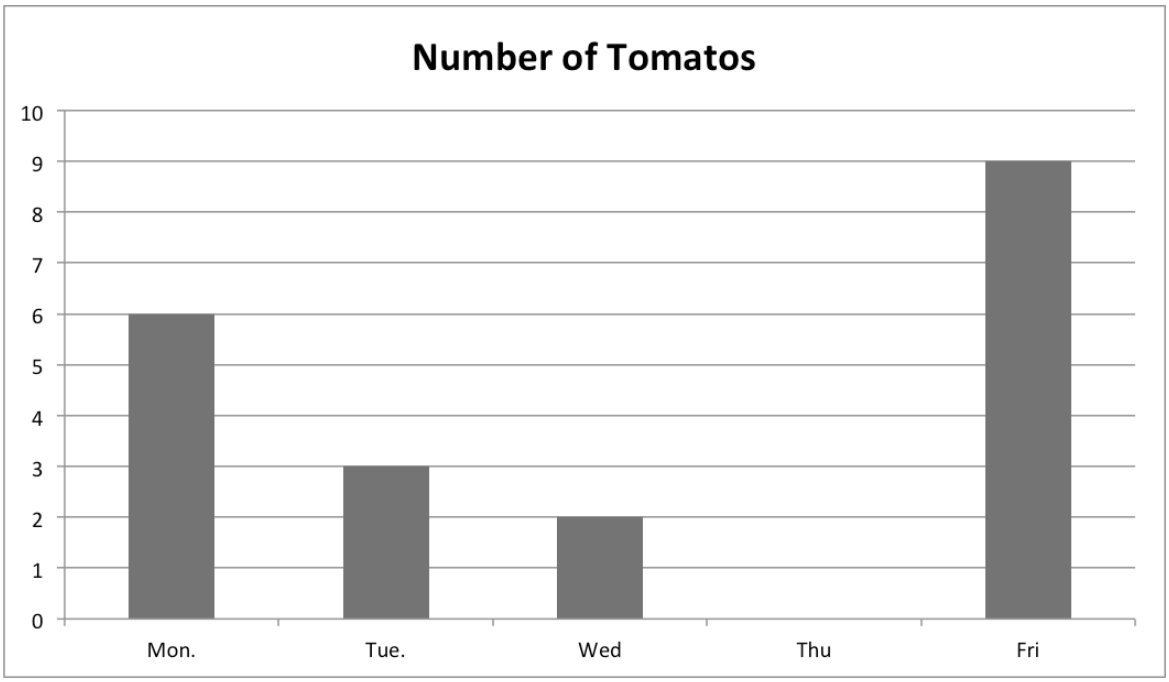
Q4.1 Read percentage of the members who keep a dog from the chart above and answer the value of it.

Ans.for Q4.1 ____ %

Q4.2 How many members are there in the class? Answer the value.

Ans.for Q4.2 ____

Question: The bar graph shown below summarizes the numbers of tomatoes harvested in the field for five days from Monday through Friday.



Number of tomatoes harvested in the field

Q5.1 How many tomatoes are harvested per day on mean during five days? Write the number of tomatoes.

Ans.for Q5.1

Question: Answer the following questions Q6.1 and Q6.2.

Q6.1 Find the value of x where the proportional equation $3:4=x:12$ can be set up.

Ans.for Q6.1

Q6.2 The equation $4x - 2 = 6$ can be solved as follows.

$4x - 2 = 6$ …(i)
$4x = 8$ …(ii)
$x = 2$

Why the equation (i) can be transformed into the equation (ii)? Choose the appropriate reason from the following options ① to ④.

① Because the equality holds even if 2 is added to both sides of the equation (i).

② Because the equality holds even if 2 is subtracted from both sides of the equation (i).

③ Because the equality holds even if both sides of the equation (i) are multiplied by 2.

④ Because the equality holds even if both sides of the equation (i) are divided by 2.

Ans.for Q6.2

Question: Maria examines the area of a rhombus drawn inside a rectangle. She attempts to find the area of a rhombus, which is drawn inside a rectangle. This rectangle is 6 cm long and 10 cm wide as shown in Figure A.

When diagonal lines are drawn inside this rhombus, the rectangle can be divided into 8 right angle triangles.

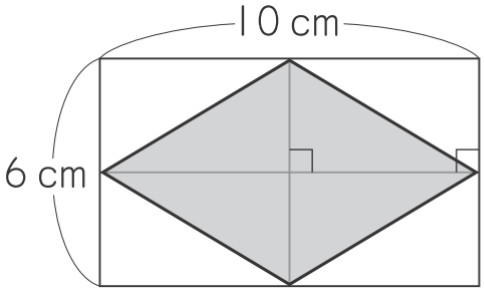


Figure A

Right angle triangles that areas equal to each other are marked with the symbol "○", as shown in Figure B.

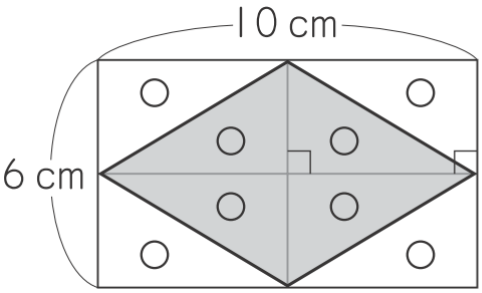


Figure B

The process for finding the area of the rhombus based on Figure B can be shown as follows.

(Continue to the next page)

Process for finding the area

The area of the rhombus is equal to the total area of 4 triangles marked with "○".

The total area of non-shaded triangles is also equal to 4 triangles marked with "○".

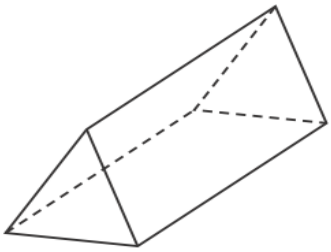
Since the area of the rectangle is equal to the total sum of the area of the rhombus and the area of non-shaded triangles, it is equal to the total area of 8 triangles marked with "○".

Therefore, the area of the rhombus is equal to half of the rectangle.

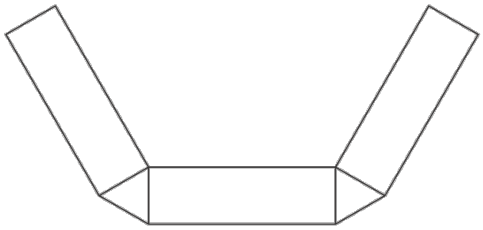
Q7.1 Calculate the area of the rhombus and answer the value.

Ans.for Q7.1 $\square$ cm^2

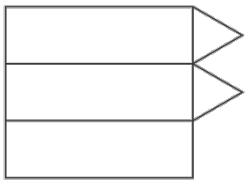
Q8.1 There is a solid as shown on the right. This solid can be made by folding a plane figure. Choose the appropriate one from the following options ① to ④.



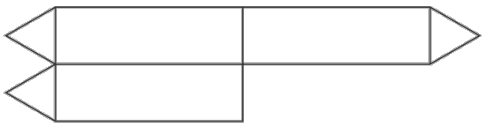
①



②



③



④

Ans.for Q8.1

Question: The cooking practice lesson has started. Ingredients and their amount for one serving to make steamed rice are shown as follows.

Ingredients and their amount for one serving

Rice: 80 g Water: 120 g (The weight of water is 1.5 times more than that of rice.)

Mark measures the weight of rice needed for the group.
First, he puts an empty container on a scale. The weight indicated on the scale is shown in Figure A. Next, he puts rice in the container. The weight indicated on the scale is shown in Figure B.

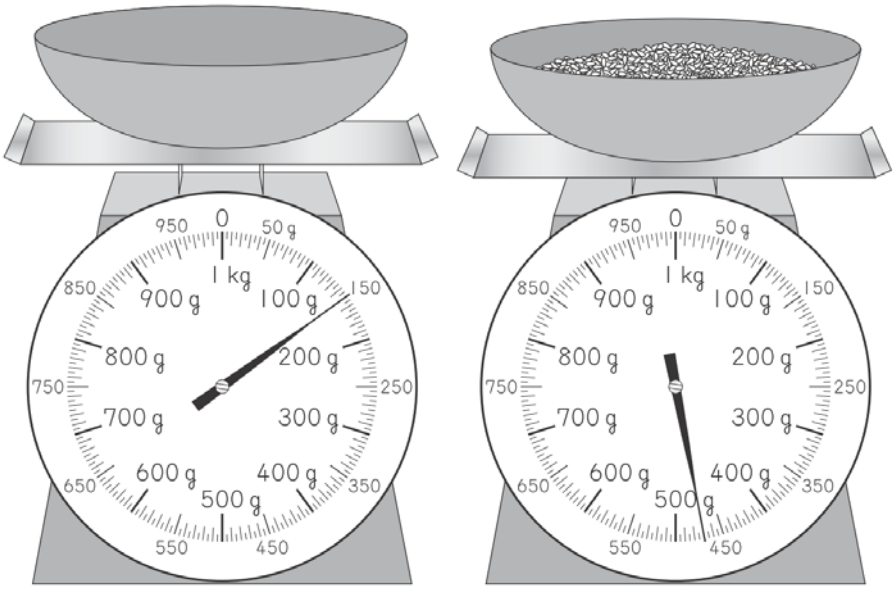


Figure A Figure B

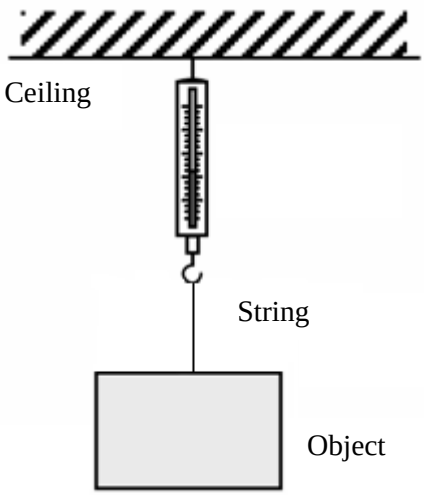
Q9.1 How much rice (g) did Mark put in the container?

Ans.for Q9.1 _____ g

Q9.2 How much water (g) is needed for Mark's group to make steamed rice?

Ans.for Q9.2 _____ g

Question: An object is hanged like shown in the picture below.



Q10.1 What force pulls this object downward? Choose one from ①to ④

① Gravity
② Density
③ Magnetism
④ Weight

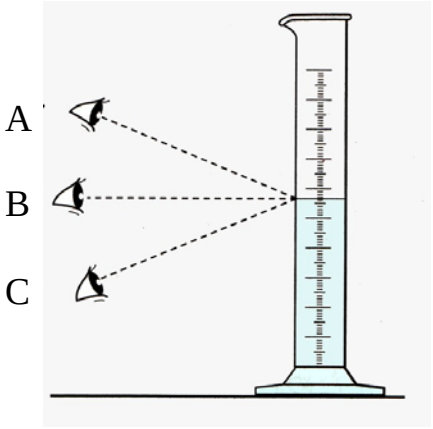
Ans.for Q10.1

Q10.2 How many forces act on the object when it stops? Choose one from ①to ④

① 1 force
② 2 forces
③ 3 forces
④ 4 forces

Ans.for Q10.2

Question: The picture below shows the use of measuring cylinder.

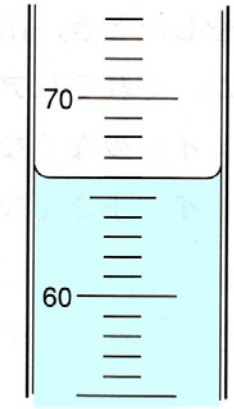


Q11.1 Which eye level is correct to measure? Choose one from ①to ④

① Eye level A
② Eye level B
③ Eye level C
④ All the eye levels are correct

Ans.for Q11.1 ____

Q11.2 What is the measurement of the following picture?



Unit: ml

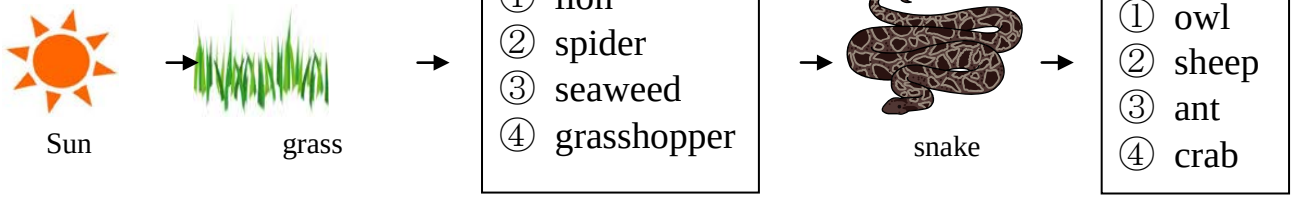
Ans.for Q11.2 ____ ml

Q11.3 John makes a solution by dissolving 10 grams of salt in 100 ml of water. He wants a solution a solution that is half as concentrated. What should he add to the original solution to obtain a solution that is about half concentrated? Choose one from ①to ④

① 50 ml of water
② 100 ml of water
③ 5 grams of salt
④ 10 grams of salt

Ans.for Q11.3 ____

Question: The picture below shows the relationship between plant and animal known as a food chain.



Q12.1 In the food chain, what is grass called? Choose one from ①to ④

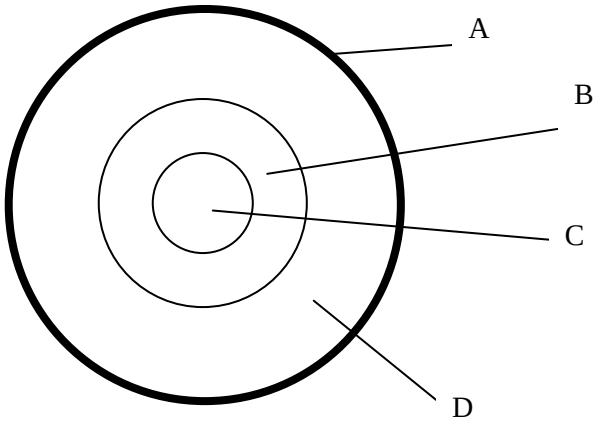
① Producer
② Primary consumer
③ Secondary consumer
④ Predator

Ans.for Q12.1 ____

Q12.2 Choose one from ① to ④best organism in Box 1 and 2 respectively to complete the food chain.

Ans.for Q12.2 **Box 1** ____ **Box 2** ____

Question: The picture shows the four main layers of the Earth.



Q13.1 Which of the following in the table shows the correct combination of layer name? Choose one from ①to ④

	Layer A	Layer B	Layer C	Layer D
Answer 1	Outer core	Mantle	Crust	Inner core
Answer 2	Crust	Mantle	Inner core	Outer core
Answer 3	Crust	Outer core	Inner core	Mantle
Answer 4	Mantle	Inner core	Outer core	Crust

① Answer 1
② Answer 2
③ Answer 3
④ Answer 4

Ans.for Q13.1

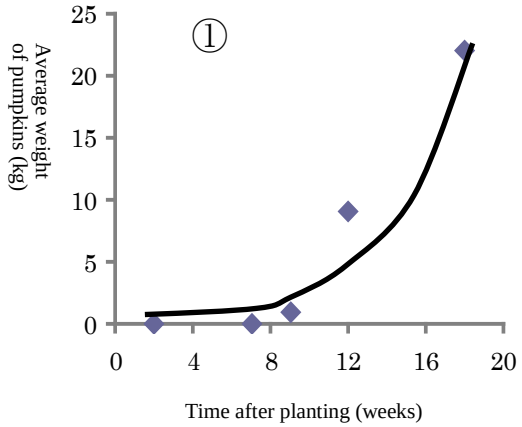
Q13.2 Which layer is the hottest?

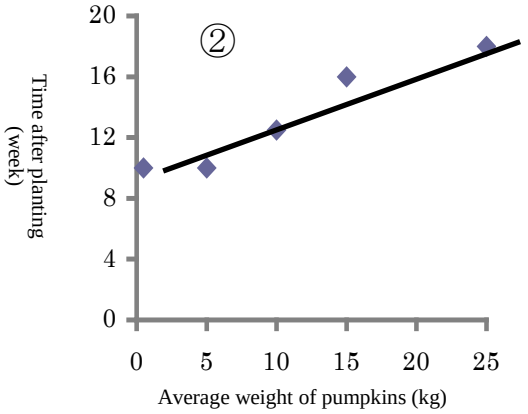
① Layer A
② Layer B
③ Layer C
④ Layer D
⑤ All four layers are the same temperature

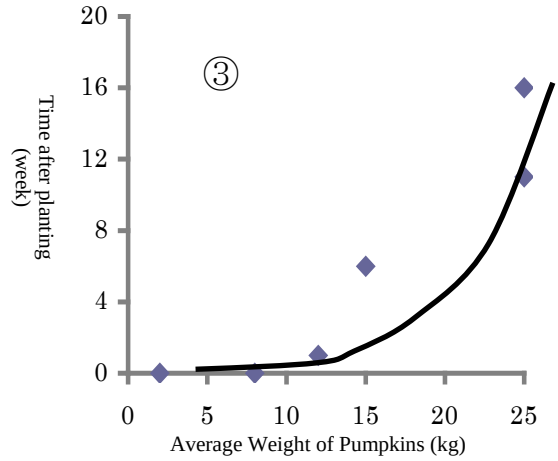
Ans.for Q13.2

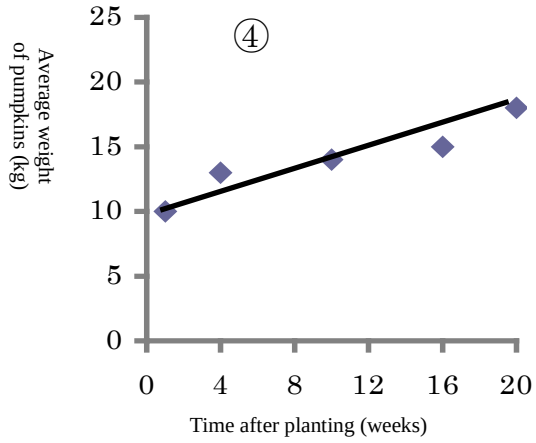
Question: Mary grew pumpkins. She found the average weight of ten pumpkins at different times after planting. Her results are listed below.

Time After Planting (weeks)	Average Weight of Pumpkins (kg)
2	0
7	0
9	1
12	9
18	22









Q14.1 Which one of these graphs best describes her results? Choose one from ①to ④

Ans.for Q14.1

Remove this blank page and use it as a calculation sheet.

Appendix D:Test for G7&8 students
EQUITV II ENDLINE SURVEY#3
Math/Science Test

24-S2

BEFORE YOU START:

1. Time allowed for this test is **40** minutes.
2. This test contains 23 questions from Math and Science for you to answer.
3. Make sure you write your answer in the answer box or it will not be scored.
4. You can use blank space on the sheet as a working paper to figure out the answer.
5. If you decide to change your answer make sure that your answer is clear.
6. The result of this test is used for solemnly Project purpose only and does not affect any of your future academic careers so please answer honestly.

Given & Family name:	**School:**
Age :	**Grade:**
Sex: ❒ male ❒ female	**Province:**
Did you take this test last year? ❒ No ❒ Yes	

HOW TO WRITE YOUR ANSWER:

There are two type of question. One is a descriptive and other is a selective question. For the descriptive question you write value or word for the answer, for example;

Ans. 123.4

For the multiple choice question, you will be given some possible answers, for example option ① to ④.

① Mammal
② Reptile
③ Plant
④ Insect

If you think ② is a correct answer, then write the number of option in the answer box like below;

Ans. 2

DO NOT COPY

Question: Calculate the following expressions and answer the value.

Q1.1 $2436 \div 12$ **Ans.** ☐

Q1.2 $4.6 - 0.21$ **Ans.** ☐

Q1.3 84×3.6 **Ans.** ☐

Q1.5 $\frac{3}{7} - \frac{2}{5}$ **Ans.** $\frac{\square}{\square}$

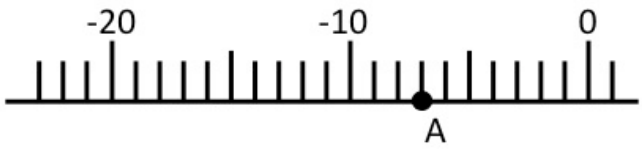
Q1.7 $6 - (-7)$ **Ans.** ☐

Question: Read questions Q2.1, Q2.2 and Q3.3, and write the answer.

Q2.1 Find the lowest common multiple of 8 and 12.

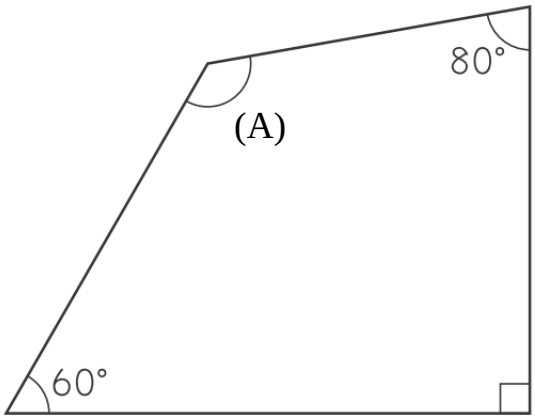
Ans.for Q2.1

Q2.2 The following figure shows a part of a number line. What is the number indicated by point A? Write the answer.



Ans.for Q2.2

Q3.3 How many degrees is the angle (A) in the quadrilateral shown below? Write the answer.

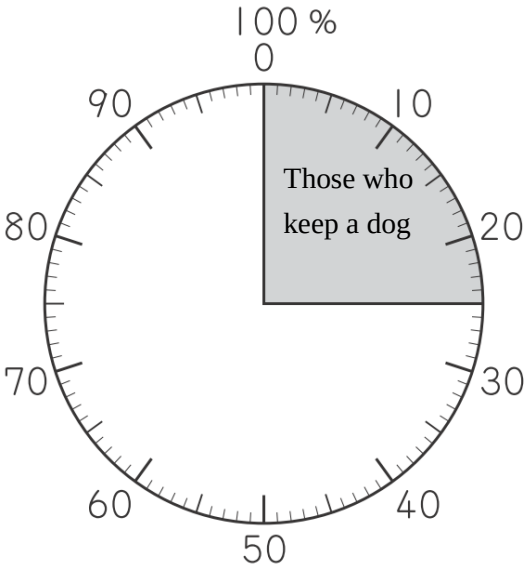


Ans.for Q3.3 °

Question: Read the following information and answer questions Q4.1 and Q4.2.

The pie chart shown below indicates the percentage of those who keep a dog at home among all class members.
The number of those who keep a dog is 8.

Percentage of those who keep a dog at home



Q4.1 What percentage of members keep a dog? Write the answer.

Ans.for Q4.1 ____ %

Q4.2 How many members are there in the class? Write the answer.

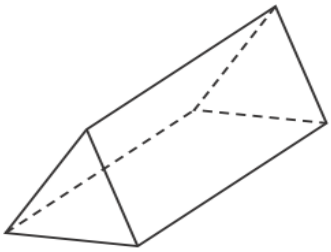
Ans.for Q4.2 ____

Question: Answer the following questions Q6.1 and Q8.1.

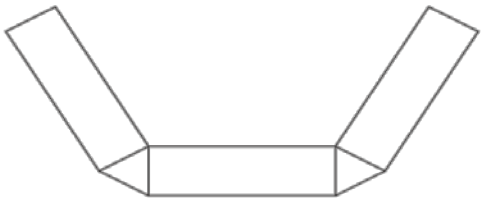
Q6.1 Find the value of X where the proportional equation is 3:4 = *x*:12.

Ans.for Q6.1

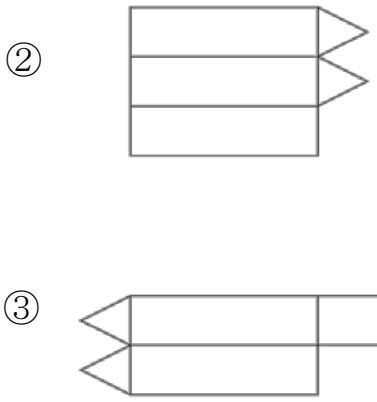
Q8.1 There is a solid as shown on the right. This solid can be made by folding a plane figure. Choose the appropriate one from the following options ① to ④.



①



②



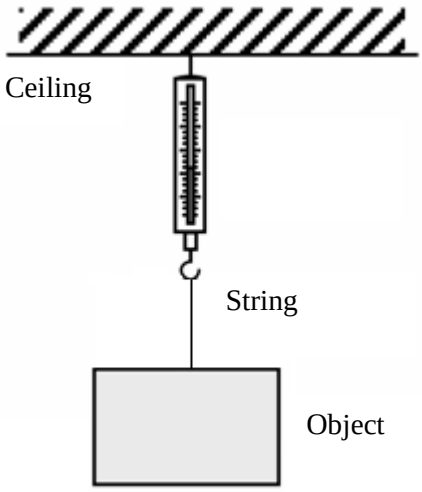
③

④

Ans.for Q8.1

Question: An object is hung as shown in the picture below.

Q



10.1 What force pulls this object downward? Choose one from ① to ④

① Gravity
② Density
③ Magnetism
④ Weight

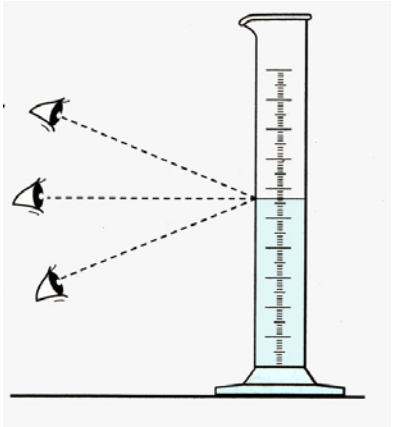
Ans.for Q10.1

Q10.2 How many forces act on the object when it stops?
Choose one from ① to ④

① 1 force
② 2 forces
③ 3 forces
④ 4 forces

Ans.for Q10.2

Question: The picture below shows the use of measuring cylinder.

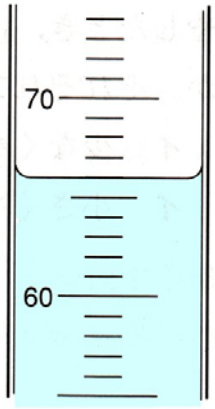


Q11.1 Which eye level is correct to measure? Choose one from ①to ④

① Eye level A
② Eye level B
③ Eye level C
④ All the eye levels are correct

Ans.for Q11.1 ____

Q11.2 What is the measurement of the following picture?



Unit: ml

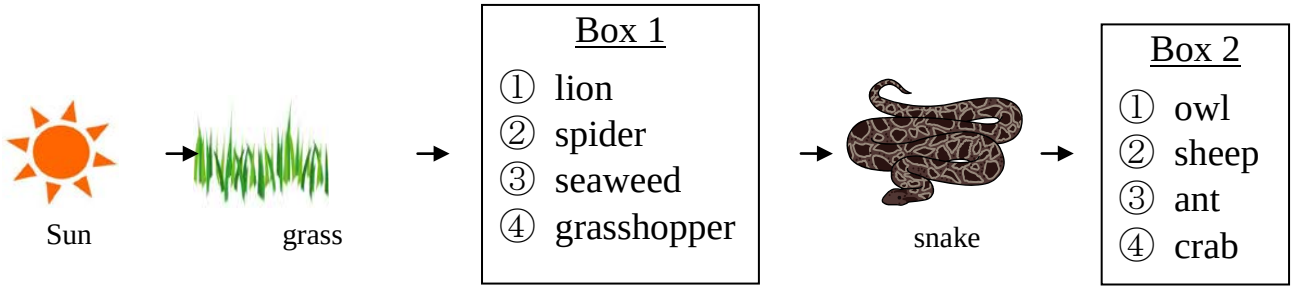
Ans.for Q11.2 ____ ml

Q11.3 John makes a solution by dissolving 10 grams of salt in 100 ml of water. He wants a solution that is half as concentrated. What should he add to the original solution to obtain a solution that is about half concentrated? Choose one from ①to ④

① 50 ml of water
② 100 ml of water
③ 5 grams of salt
④ 10 grams of salt

Ans.for Q11.3 ____

Question: The picture below shows the relationship between plant and animal known as a food chain.



Q12.1 In the food chain, what is grass called? Choose one from ①to ④

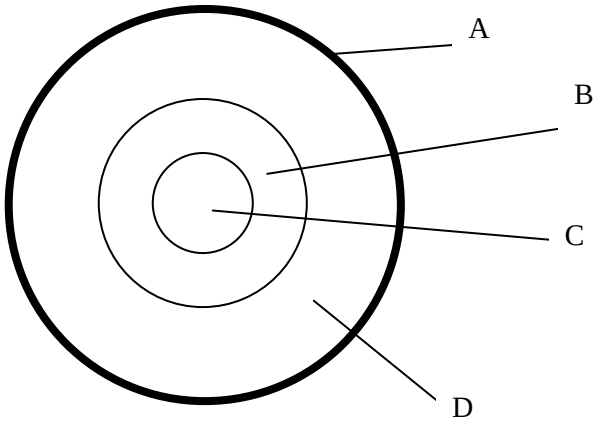
① Producer
② Primary consumer
③ Secondary consumer
④ Predator

Ans.for Q12.1 ____

Q12.2 Choose one from ① to ④best organism in Box 1 and 2 respectively to complete the food chain.

Ans.for Q12.2 **Box 1** ____ **Box 2** ____

Question: The picture shows the four main layers of the Earth.



Q13.1 Which of the following in the table shows the correct combination of layer name? Choose one from ①to ④

	Layer A	Layer B	Layer C	Layer D
Answer 1	Outer core	Mantle	Crust	Inner core
Answer 2	Crust	Mantle	Inner core	Outer core
Answer 3	Crust	Outer core	Inner core	Mantle
Answer 4	Mantle	Inner core	Outer core	Crust

① Answer 1
② Answer 2
③ Answer 3
④ Answer 4

Ans.for Q13.1

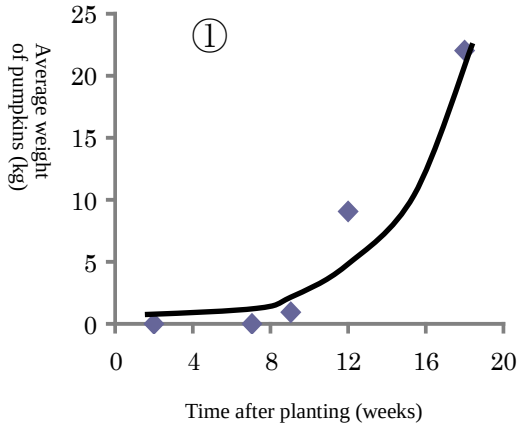
Q13.2 Which layer is the hottest?

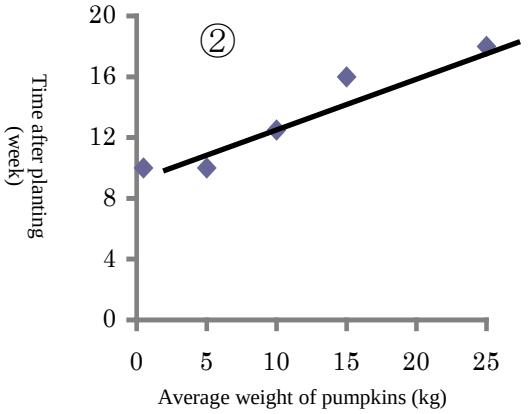
① Layer A
② Layer B
③ Layer C
④ Layer D
⑤ All four layers are the same temperature

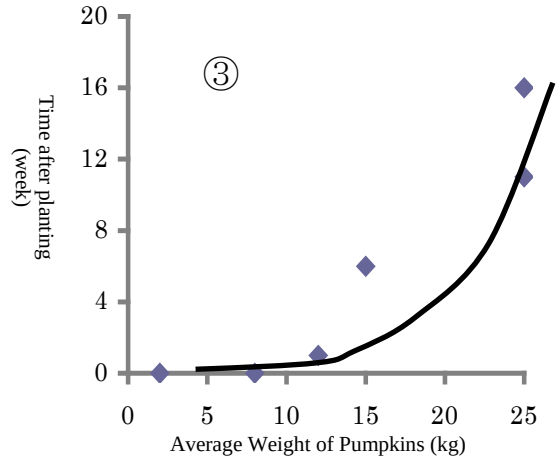
Ans.for Q13.2

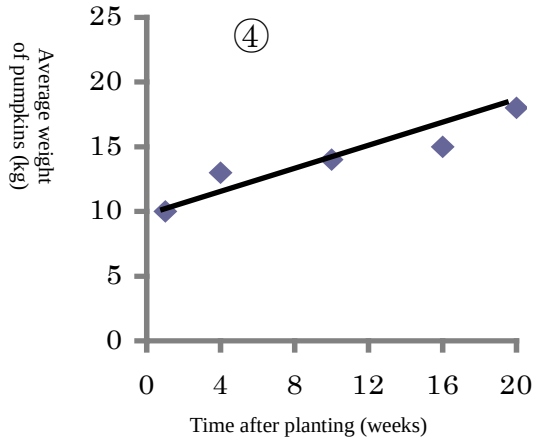
Question: Mary grew pumpkins. She found the average weight of ten pumpkins at different times after planting. Her results are listed below.

Time After Planting (weeks)	Average Weight of Pumpkins (kg)
2	0
7	0
9	1
12	9
18	22









Q14.1 Which one of these graphs best describes her results? Choose one from ①to ④

Ans.for Q14.1

Remove this blank page and use as a calculation sheet.

Appendix E: Recommendation for Sustainable Utilization of EQUITV Program by EQUITV Monitoring Committee

4th September, 2015

Fact/Issues	Recommendation	Action
Level 0: Schools didn't install three basic items (Electricity, TV, and Medium - DVD and Broadcast program) - Only 41% of schools started using EQUITV program (40 % of schools don't have TV equipment) (ELD and Prov. Gov. didn't provide TV to whole schools yet. At school level; schools didn't budget EQUITV funds for SLIP plan; and budgeted TFF has not yet come) - Schools confuse who provide TV equipments / DVD / Satellite equipment (TV, decoder, etc.) / Geneset	1. e-learning division (ELD) reviews national dissemination plan (NDP) and provincial education office reviews provincial dissemination plan (PDP) yearly 2. Awareness on TV readiness ✓ ELD conducts awareness to clarify roles of stakeholders on EQUITV program depending on the provincial situation for schools to have an access to TV sets [TV equipments / DVD / Satellite equipment (TV, decoder, etc.) / Geneset] ✓ ELD continuously conducts high-level awareness to provincial government and members of parliament through the various approaches	1-1 ELD identifies EQUITV equipment situation and deployment through the monitoring results 1-2 ELD conducts NDP and PDP workshop to review the role of stakeholders and strategy of procurement of TV equipment according to the situation 2-1 ELD revise awareness tools and conducts for Provincial Gov. and members of parliament 2-2 Provincial Gov. and SO conduct awareness to schools 2-3 ELD uses media (e.g. radio) awareness directly to Schools

Fact/Issues	Recommendation	Action
Level 1:		
1.1 No TV materials in 65% of schools Delivery issue by Prov. Gov.	1-1 ELD informs and follows up distribution status to provinces and SOs. 1-2 ELD identifies distribution status of distribution of Material and number of requirement books.	1-1-1 ELD communicates with SO and Prov. Gov. 1-1-2 ELD sends notification letter to Prov. Gov. (cc to SO and schools) 1-2-1 ELD consult Prov Education Office and SOs to collect information of requirement number of schools. 1-2-3 ELD send additional TRBs and SWB according to the information
1.2 Huge cost of delivery of resource materials	1-3 ELD considers to deliver soft-copy of TRB, SWB, and DVD	1-3-1 ELD direct contact to selected monitoring schools 1-3-2 Prov. Gov. informs to school through media (e.g. radio program)
2 No training in schools (But teachers who received EQUITV modules at Teachers colleges are teaching with TV program.)	2-1 ELD instructs Prov. Gov. to ensure whether all schools received training	2-1-1 Prov. Gov. /Division of Education identifies status of training of all schools
	2-2 Prov. Gov. conducts and monitor district, cluster, and school-based training	2-2-1 Provincial and cluster trainers conduct training 2-2-2 SOs monitor training 2-2-3 Prov. Gov. reports to ELD progress of training through SOs
	2-3 ELD and TED strength implementation of EQUITV module at PTCs.	2-3-1 ELD and TED monitor and supervise EQUITV module implementation

3	School teachers don't use TV program despite having complete equipments, materials, and training	3-1 ELD and Prov. Gov. including SO, conduct follow up awareness and monitoring for schools	3-1-1 ELD and Prov. Gov. including SO, conduct HT meeting at district level 3-1-2 ELD feeds back to schools examination results and impacts of EQUITV program 3-1-3 SOs conduct EQUITV monitoring and supervise Prov. Gov. conducts radio awareness for schools (invite TV teachers, receiving teacher, etc.)

Fact/Issues	Recommendation	Action
Level 2: 1 Schools stopped utilizing TV program due to; - Inconsistent Electricity (continuous blackout) - Stolen Equipment - Private use and misuse of Equipment - Equipment fault	1-1 Schools must manage consistent power for TV program	1-1-1 (for Geneset schools) Prepare budget and Manage fuel for generator (such as bulk stock) 1-1-2 (for Schools using PNG Power) Purchase standby generator and Prepare its fuel
	1-2 Schools and stakeholders purchase solar power system	1-2 ELD writes letter to Prov. Gov. and members to recommend supplying of the solar power set for schools
	1-3 Improves school security measures	1-3 Schools develop and update equipment and inventories
	1-4 Schools develop equipment management guideline and system	1-4 ELD includes equip and management guideline into E-learning policy to avoid private use, misuse, and loss of equip, and distribute to school
	1-5 SOs conduct monitoring of EQUITV Program during school visits	1-5 BoM/Schools report to Prov. Gov./SOs about private use, misuse, and faulty equipment
	1-6 ELD/Prov. Gov. develop the school support system regarding equipment problems	1-6 Schools consult ELD for advises about solution of the problems [e.g. ELD provide advise/quotation equipment, Schools seeking advices of solution of equipment problems (through SMS) reports about problem to ELD]

Fact/Issues	Recommendation	Action
Level 3 1 Schools stopped use of EQUITV Program despite basic requirement achieved level 0 to 2 issues (Schools faced various issues to sustain EQUITV program)	(General) 1-1 ELD feedbacks and shares good practices from successful schools to schools	1-1 ELD feedbacks and shares good practices from successful schools and provide solution of general issues
	1-2 Prov. Gov./SO/ELD monitor the schools	1-2 In/Pre-service Committees introduce feedbacks and solutions at In/Pre-service training
(Example of Specific issues) 1) Shortage of SWB	(Specific) 1)-1 ELD should print and send SWB, however it is difficult (refer to Level 1)	1)-1 ELD provides soft-copy to schools in shortage of SWB
	1)-2 ELD Considers alternatively measure to replace SWB	1)-2 E-learning Production branches emphasize blackboard utilization to model lessons
2) Getting Tired of Contents (no revised for 10 years)	2)-1 ELD revises and develops resource materials and incentive videos for teachers	2)-1-1 ELD timely revises resource materials 2)-1-2 ELD develops incentive videos such as Hint and Tips, coaching video, science catalogues, other subjects, lower-grades, etc.
3) High-Cost DVD/Damage of DVD	3)-1 ELD considers to duplicate content for USB/HDD 3)-2 ELD considers to develop on-demand program (Internet) in the future	3)-1-1 ELD develops copyright policy and guideline including manuals of usage in USB/HDD 3)-2-1 ELD studies and research the system of on-demand program

4) Trained teacher transfer	4)-1 Prov. Gov consider avoiding transfer of the provincial/cluster trainers . 4)-2 ELD develops and provides starter training kit	4)-1-1 ELD advises to Prov. Gov. to consider avoiding transfer of the provincial/cluster trainers 4)-1-2 Schools conduct school-based training 4)-1-3 SO/Cluster trainers conduct follow-up trainings 4)-2-1 In/Pre-service committees develop DVD start-up kit
5) Small number of TV screen (High Students/TV ratio) 6) Small TV screen	5), 6)-1 ELD recommend the TV size and proper number of students per class for effective usage	5),6)-1 In/Pre-service committees and awareness inform the recommendation during training and awareness
7) Leave of Teachers (absenteeism)	7)-1 School administrations organize and arrange to ensure the continuation of TV lessons during teacher absence/leave	7)-1 Alternative teachers conduct/facilitate EQUITV program role and TV lessons according to the arrangement
8) No proper building for TV room	8)-1 (1st step) Utilize ordinary class for TV lesson (2nd step) ELD provide guideline for proper TV classroom to schools	8)-1-1 Develop time schedule to bring TV sets to classroom(e.g. Moreguina: School organize students' duty roaster) 8)-1-2 Schools follow the guideline from ELD and include on SLIP plan

Fact/Issues	Recommendation	Action
Level 4 Almost all TV teachers recognize impact and benefits of EQUITV program 1 Teachers keep gaining new skills/knowledge 2 Teachers recognize effectiveness and input	In order for teachers to continuously recognize benefits of TV program, boost the moral, and enjoy the TV program,	
	1&2-1 ELD supports and develops EQUITV program and specific PCK (Pedagogical Content Knowledge) training according to the needs and interest of teachers	1-1-1 ELD conducts needs survey 1-1-2 ELD develops program and manual according to the needs and interests
	1&2-2 ELD provides EQUITV news letter to inform and update the EQUITV Program	1-2-1 E-learning cooperate branch develops news letter or media program 1-2-2 E-learning cooperate branch updates ELD website.
	1&2-3 ELD on the awareness meeting at a district level (it's expensive exercise but will give a huge impact)	1-3-1 ELD develops plan on the district meetings and conducts
	1&2-4 Systematize EQUITV program monitoring and supervision	1-4-1 ELD consults standard division and Prov. education officer to establish system of EQUITV program monitoring and supervision (E.g. SOs use whole school monitoring form, school census)
	1&2-5 ELD recognizes the best TV lesson schools in the country	1-5-1 ELD provides certificates and prizes (EQUITV T-shirt) to the best TV lesson schools in the country 1-5-2 EL cooperate branch acknowledges the best TV school to the news letter.

3 Values-added Teachers recognize the potential of EQUITV program (e.g. student motivation is high, they listen to the response of model class, easy to cover syllabus, standardized quality, comfortable to perform class with confidence, and access contents through various mediums and resources, such as broadcast, DVD, and USB [in the future]) Teacher needs material according to students' ability level and environment.	3-1 ELD and CDD collaborate to develop TV program/material in line with syllabus, and keep standardized and user-friendly program/material for teachers and students	3-1-1 ELD develops material in line with SBC. 3-1-2 ELD produces user-friendly program/materials for teachers and students
	3-2 ELD introduces variety of medium to support teachers to choose flexible teaching and learning according to the level of teachers/students and environment	3-2-1 ELD studies variety of medium. 3-2-2 ELD provides variety of medium to support teacher 3-2-3 ELD conducts monitoring and evaluation for improvement of the use of variety of medium
	3-3 ELD conducts all department training through distance mode using EQUITV platform	3-3-1 ELD consults with other divisions to collect training information. 3-3-2 ELD develops training contents of other divisions' trainings and ELD facilitate trainings through broadcast or DVDs.