

**EVALUATION REPORT
ON THE
SCIENCE EXPLORER**

RESEARCH UNIT, STMERPD
Science Education Institute
Department of Science and Technology

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SCIENCE EXPLORER
EVALUATION REPORT
For the period January – November 2011

INTRODUCTION

The “Science Explorer” project is a mobile interactive learning facility that features hands-on learning through fun and easy science activities, targeting elementary and high school students. Utilizing the former Mobile Information Technology Classroom (MITC), the bus was refurbished to contain laboratory facilities, audio-visual equipment, interactive exhibits, and various learning materials that are helpful in facilitating learning to the students.

The project aims to (1) bring to under-equipped schools a mobile interactive science laboratory that would enable students to conduct hands-on experiments and discover the wonderful world of science; (2) bridge the lack of science facilities in schools in the country; and (3) provide a fun and learning experience in science and technology.

The “Science Explorer” was launched during the last quarter of 2010 and went full blast starting the first quarter of 2011. Inherent to the project is a system for evaluating whether or not its immediate objectives are achieved.

METHODOLOGY

For the evaluation component of the project, an instrument (**Appendix 1**) was devised which gathered basic information from the students such as name, contact information, age, grade level and sex; and measured agreement of the participants with each of the following statements:

- *Nakatutuwa ang mga ginawa namin sa Science Explorer*
- *Marami akong natutunan na mga bagong kaalaman sa agham at teknolohiya*
- *Nagkaroon ako ng interes na maging scientist o engineer balang araw*
- *May natutunan ako na maaaring magamit sa pang-araw-araw na pamumuhay*
- *Napag-alaman ko na ang agham pala ay makikita kahit sa pangkaraniwang bagay*
- *Maraming kamangha-manghang gamit sa bus na wala sa paaralan namin*
- *Malinaw at magaling magpaliwanag ang guro*

The following Likert rating scale (according to intensity of agreement with the statement) was used to measure agreement:

- *Lubos na sumasang-ayon (Strongly Agree)* 5
- *Sumasang-ayon (Agree)* 4
- *Wala lang/Deadma (Undecided)* 3
- *Hindi sumasang-ayon (Disagree)* 2
- *Lubos na hindi sumasang-ayon (Strongly Disagree)* 1

In addition to this, open-ended items were included to get the students' views, comments and suggestions that would help improve the delivery of service of the Science Explorer. The evaluation instrument was administered to the student-participants at the end of each session, which featured one or two modules from the following pool: *Biodiversity, Biotechnology, Climate, Creativity, Eclipse and Telescope, Robotics, Space Science, Water Rocket, Volcanoes, Weather, Earthquake and Fun Math.*

Data were encoded using an in-house encoding system that was developed using CSPRO and processed using SPSS.

HIGHLIGHTS OF EVALUATION

Demographic Characteristics of Participants

Table 1. Number of Schools Served by Area and School Level

Area	Elementary	High School	Total
Ilocos Norte	9	3	12
Pangasinan	30	5	35
Rizal	1	1	2
Metro Manila	1	1*	2
Total	41	10	51

*PNU, includes Elementary Level students

A total of 52 schools have benefited from the Science Explorer from January to October of this year, most of which (41) were elementary schools while 10 were high schools. Majority of the schools were located in Pangasinan (35), followed by Ilocos Norte at twelve (12) schools. The list of recipient schools is shown in Table 2.

Table 2. Recipient Schools by Area and School Level

Area	Elementary School	High School
Pangasinan	<ol style="list-style-type: none"> 1. Bliss Elem. School 2. Bolosan Elem. School 3. Bonuan Boquig Elem. School 4. Calmay Elem. School 5. Carael Elem. School 6. Caranglaan Elem. School 7. Gen Gregorio del Pilar Elem. School 8. Juan L. Siapno Elem. School 9. Juan P. Guadiz Elem. School 10. Lasip Grande Elem. School 11. Leon Francisco Maramba Elem. School 12. Lomboy Elem. School 13. Lucao Elem. School 14. Malued Elem. School 15. Mamalingling Elem. School 16. Mangin-Tebeng Elem. School 17. North Central Elem. School 18. Pantal Elem. School 19. Pascuala G. Villamin Elem. School 20. Pogo Lasip Elem. School 21. Pugaro Integrated School 22. Sabangan Elem. School 23. Salapingao Elem. School 24. Salapingao Nat'l High School 25. Salisay Elem. School 26. St. Albert the Great School 27. Suit Elem. School 28. T. Ayson Rosario Elem. School 29. Tambac Elem. School 30. Victoria Q. Zarate Elem. School 	<ol style="list-style-type: none"> 31. Carael Nat'l High School 32. Dagupan City Nat'l High Sch. 33. East Central Integrated Sch. 34. Federico N. Ceralde Integrated School 35. Judge Jose de Venecia St. Mem. Nat'l High School

Table 2. Recipient Schools by Area and School Level (cont.)

Area	Elementary School	High School
Ilocos Norte	<ol style="list-style-type: none"> 1. A.P. Santos Elem. School 2. Binsang Elem. School 3. Dariwdiw Elem. School 4. Magnuang Elem. School 5. Parang Elem. School 6. Pimentel Elem. School 7. Shamrock Elem. School 8. Sta. Maria Elem. School 9. Suyo Elem. School 	<ol style="list-style-type: none"> 10. Batac National High School 11. Cadaratan Nat. High School 12. Ilocos Norte Agri. College
Metro Manila	<ol style="list-style-type: none"> 1. Doña Juana Elem. School 	<ol style="list-style-type: none"> 2. Philippine Normal University (Elem & HS)
Rizal	<ol style="list-style-type: none"> 1. Marick Elementary School 	<ol style="list-style-type: none"> 2. Pililia National High School

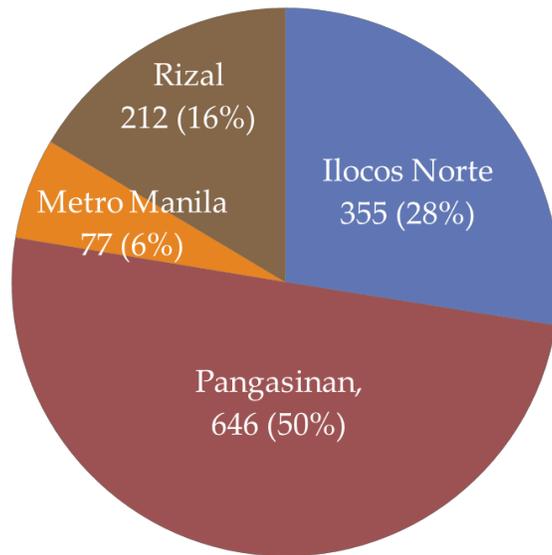


Figure 1. Number of Students Served by Area

In terms of students served, a total of 1,290 students have benefited from the Science Explorer from January to November 2011, of which about half came from Pangasinan and more than a quarter from Ilocos Norte. Less than 10% of the total students served came from schools in Metro Manila.

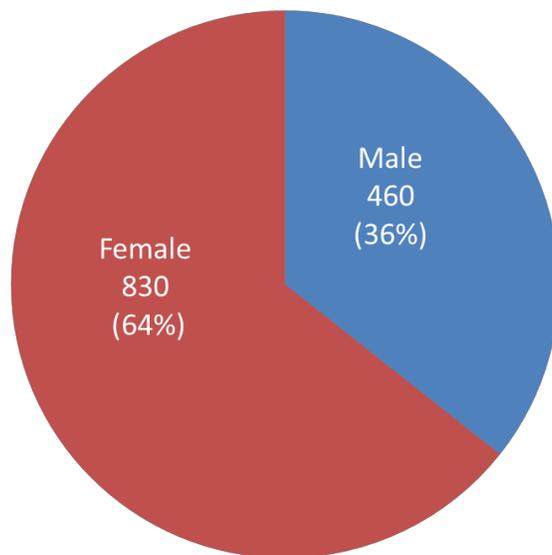


Figure 2. Number of Students Served by Sex

Out of the 1,290 students, 867 or 67.2% are elementary students while 423 or 32.8% are high school students. Disaggregating by sex, 460 or 35.7% are male while 830 or 64.3% are female. For both elementary and high school levels, the ratio of girls to boys that have benefited from the Science Explorer is about 2:1.

Table 3. Number of Students Served by School Level and Sex

Sex	Elementary	High School	Total
Male	327 (37.7%)	133 (31.4%)	460 (35.7%)
Female	540 (62.3%)	290 (68.6%)	830 (64.3%)
Total	867 (67.2%)	423 (32.8%)	1,290 (100.0%)

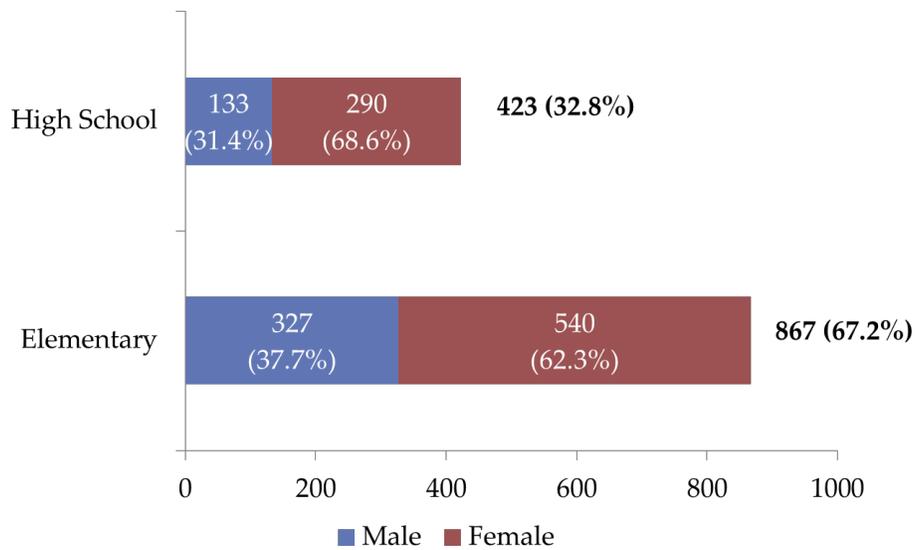


Figure 3. Distribution of Students by School Level and Sex

Participants' Evaluation of Science Explorer

Table 4. Average Scale Score for Every Statement by Sex

Statement	Male	Female	All
1. Nakatutuwa ang mga ginawa namin sa science explorer.	4.95 (1)	4.96 (1)	4.96 (1)
2. Marami akong natutunan na mga bagong kaalaman sa agham at teknolohiya.	4.85 (3)	4.90 (3)	4.88 (3)
3. Nagkaroon ako ng interes na madagdagan pa ang aking kaalaman sa agham at teknolohiya.	4.81 (4)	4.83 (4)	4.82 (4)
4. Nagkaroon ako ng interes na maging scientist o engineer balang araw.	4.45 (8)	4.43 (8)	4.44 (8)
5. May natutunan ako na maaring magamit sa pang-araw-araw na pamumuhay.	4.67 (6)	4.73 (6)	4.71 (6)
6. Napag-alaman ko na ang agham pala ay makikita kahit sa pangkaraniwang bagay.	4.75 (5)	4.80 (5)	4.78 (5)
7. Maraming kamangha-manghang gamit sa bus na wala sa paaralan namin.	4.57 (7)	4.60 (7)	4.59 (7)
8. Malinaw at magaling magpaliwanag ang guro.	4.86 (2)	4.92 (2)	4.90 (2)

() – Rank

On the average, the students' degree of agreement with each of the eight statements was between *Agree to Strongly Agree*. The girls gave higher degree of agreement with all the statements compared with that of the boys except for Statement 4: "*Nagkaroon ako ng interes na maging scientist o engineer balang araw*", in which the boys gave a slightly higher degree of agreement. However, for both sexes, this statement's score ranked the lowest compared with the other seven statements. The rankings of the statements were the same for both sexes, with the statement: "*Nakatutuwa ang mga ginawa namin sa science explorer*" getting the highest over-all score at 4.96.

Table 5. Average Scale Score for Every Statement by School Level

Statement	Elem	HS	All
1. Nakatutuwa ang mga ginawa namin sa science explorer.	4.96 (1)	4.96 (1)	4.96 (1)
2. Marami akong natutunan na mga bagong kaalaman sa agham at teknolohiya.	4.88 (3)	4.88 (2)	4.88 (3)
3. Nagkaroon ako ng interes na madagdagan pa ang aking kaalaman sa agham at teknolohiya.	4.82 (4)	4.82 (5)	4.82 (4)
4. Nagkaroon ako ng interes na maging scientist o engineer balang araw.	4.52 (8)	4.25 (8)	4.43 (8)
5. May natutunan ako na maaring magamit sa pang-araw-araw na pamumuhay.	4.73 (6)	4.68 (6)	4.71 (6)
6. Napag-alaman ko na ang agham pala ay makikita kahit sa pangkaraniwang bagay.	4.76 (5)	4.83 (4)	4.78 (5)
7. Maraming kamangha-manghang gamit sa bus na wala sa paaralan namin.	4.64 (7)	4.49 (7)	4.59 (7)
8. Malinaw at magaling magpaliwanag ang guro.	4.91 (2)	4.87 (3)	4.90 (2)

() – Rank

Disaggregating by school level, the statements were rated differently by the elementary and high school students, resulting to dissimilar ranking of the statements. Particularly notable was the disparity in the scores for Statement 4: "*Nagkaroon ako ng interes na maging scientist o engineer balang araw*", 4.52

among elementary school students, vs. 4.25 among high school students; and Statement 7: “*Maraming kamangha-manghang gamit sa bus na wala sa paaralan namin*”, 4.64 among elementary school students, vs. 4.49 among high school students.

The distribution of students by their degree of agreement with each of the eight statements can be seen in Figures 4-11.

From Figure 4, it can be noted that the Science Explorer experience was enjoyed by the students, with 96% and 4% of them *Strongly Agreeing and Agreeing*, respectively to the statement, “*Nakatutuwa ang mga ginawa namin sa Science Explorer*”. One factor that could have made the experience enjoyable were the lecturers who were good at explaining the concepts, to which 90.6% and 8.8% of the students *Strongly Agree* and *Agree*, respectively, although there were a few, about 0.6% who either were *Undecided* or *Disagreed* (Figure 11). While majority, 66.2%, *Strongly Agreed* that there are amazing things in the Science Explorer that could not be found in their schools, there are students who *Strongly Disagreed* with the statement (Figure 7), which is a positive indication that there are public schools that are able to acquire modern technologies. Although the students enjoyed the Science Explorer activities, the interest to pursue science and engineering was most evident in only half, or 49.7% of the students (Figure 7).

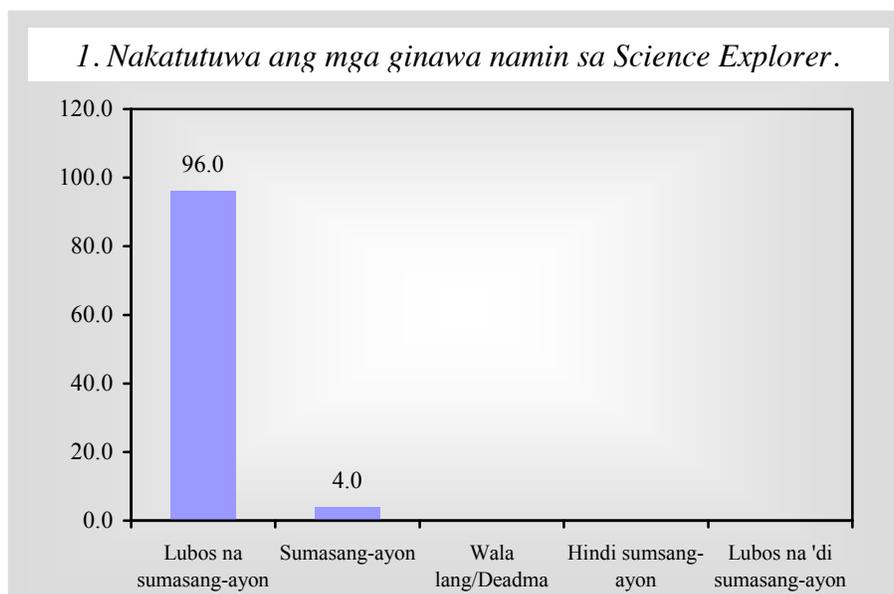


Figure 4. Percentage Distribution of Students by Agreement with Statement 1

2. Marami akong natutunan na mga bagong kaalaman sa agham at teknolohiya .

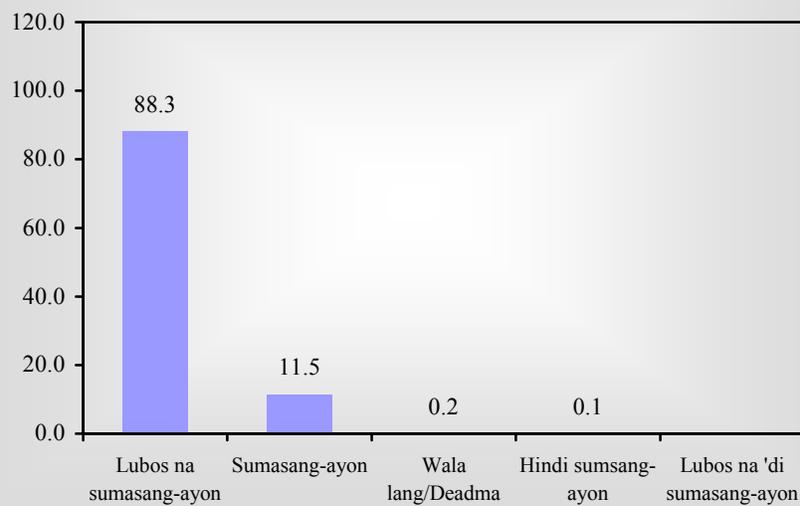


Figure 5. Percentage Distribution of Students by Agreement with Statement 2

3. Nagkaroon ako ng interes na madagdagan pa ang aking kaalaman sa agham at teknolohiya.

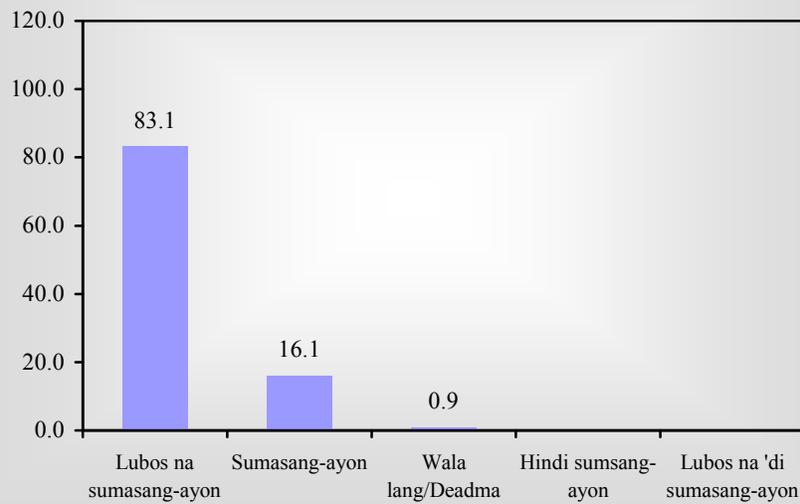


Figure 6. Percentage Distribution of Students by Agreement with Statement 3

4. Nagkaroon ako ng interes na maging scientist o engineer balang araw.

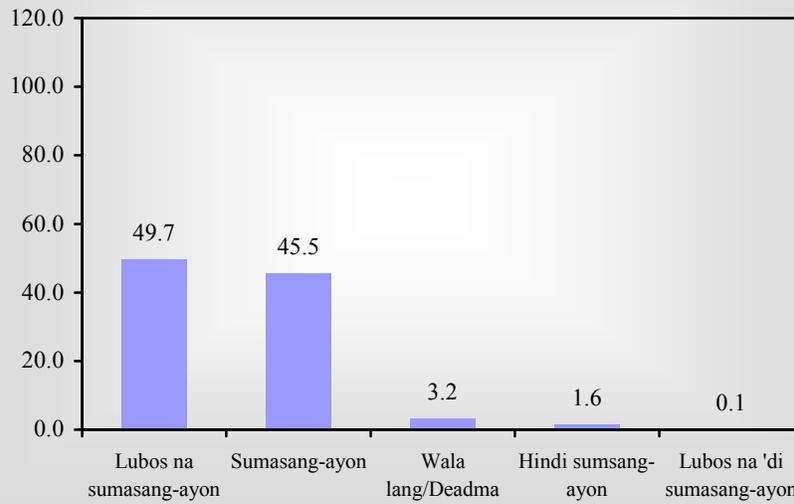


Figure 7. Percentage Distribution of Students by Agreement with Statement 4

5. May natutunan ako na maaaring magamit sa pang-araw-araw na pamumuhay.

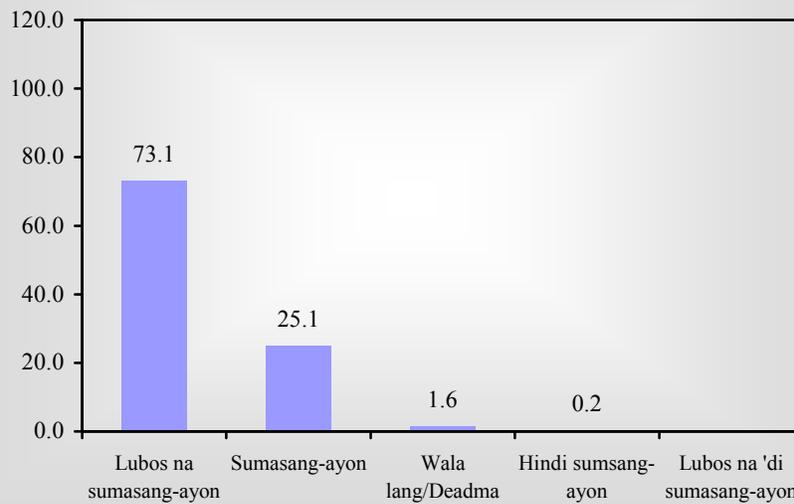


Figure 8. Percentage Distribution of Students by Agreement with Statement 5

6. *Napag-alaman ko na ang agham pala ay makikita kahit sa pangkaraniwang bagay.*

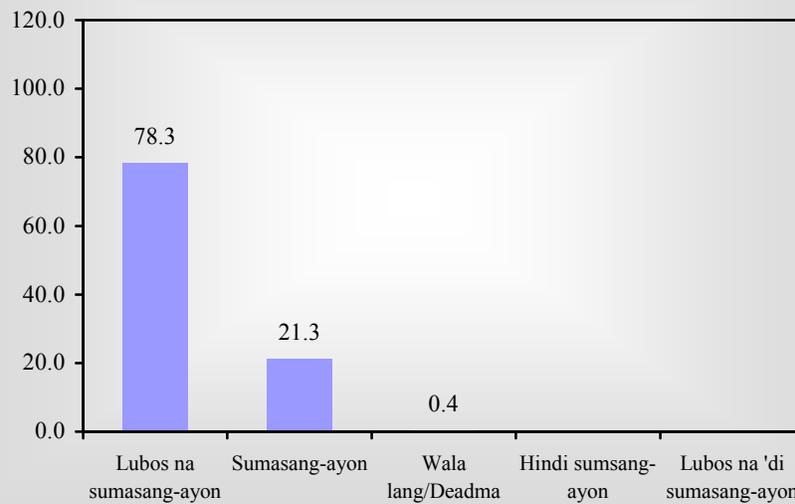


Figure 9. Percentage Distribution of Students by Agreement with Statement 6

7. *Maraming kamangha-manghang gamit sa bus na wala sa paaralan namin.*

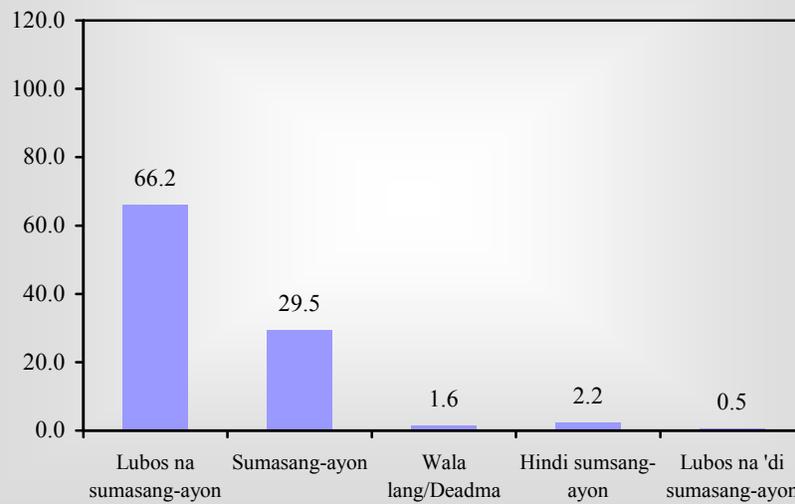


Figure 10. Percentage Distribution of Students by Agreement with Statement 7

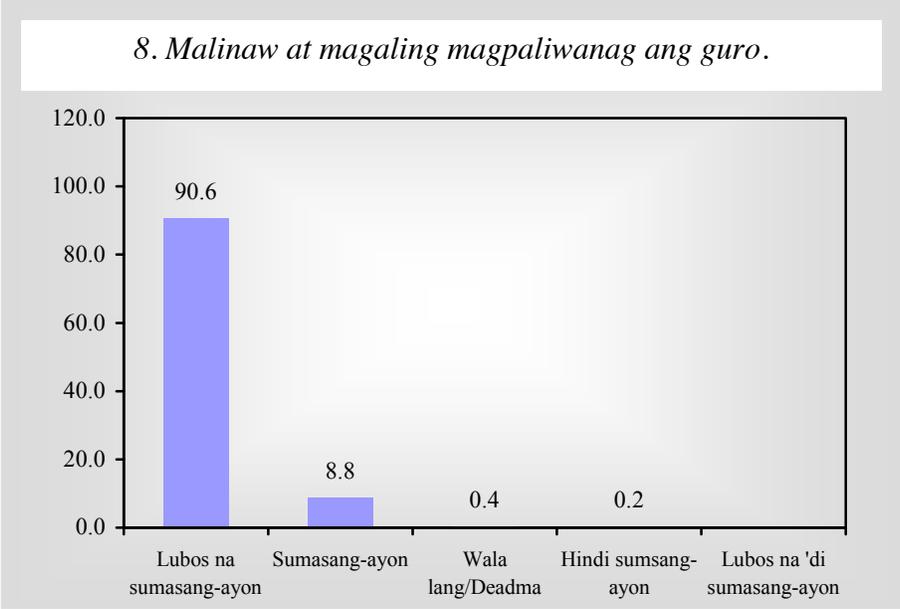


Figure 11. Percentage Distribution of Students by Agreement with Statement 8

Table 5. Sample Comments from Students

<p><i>Open-ended Statement #5 - Higit na marami sana akong natutunan kung:</i></p>
<p>“higit na matagal ang oras” “gumamit sila ng iba pang magandang strategy” “mas marami pang activities” “ako ay komportable” “hindi maingay/magulo ang katabi ko” “ako ay nakinig” “gumamit ng mic(rophone) ang guro” “dahan-dahan sa pagpapaliwanag” “everything’s perfect”</p>
<p><i>Open-ended Statement #6 – Iba pang mungkahi na ikagaganda ng Science Explorer:</i></p>
<p>“kumpletong materials/hand-outs” “mic, speaker, bawasan ang lamig” “mas maraming computers/gamit na pang-science(microscope, telescope, etc.)/kakaibang activities/experiments” “banyo po kasi po kung may naiihi” “maging masayahin ang mga nagtuturo/mas maganda kung palabiro din ang guro” “mas gawing interesado ang mga paksa” “mas mahabang oras” “wala, dahil sadyang napakaganda ng science explorer” “ang Science Explorer ay nakatulong sa amin”</p>

CONCLUSIONS AND RECOMMENDATIONS

- In terms of the achievement of the immediate objectives of the project, evaluation from its target beneficiaries, i.e., elementary and high school students using the devised tool showed positive response.
- The students had a fun time doing the activities in the Science Explorer as shown by the high rating for Statement 1: *“Nakatutuwa ang mga ginawa namin sa science explorer”* , 4.96, which is near the highest score of 5 (Strongly Agree).
- Comparing boys and girls, the latter find the Science Explorer activities more novel, as indicated by the higher scores they gave to the statements.
- However, for both sexes, least agreement with Statement 4: *“Nagkaroon ako ng interes na maging scientist o engineer balang araw”*, was shown, indicating that more efforts must be exerted to develop awareness and interest in science and mathematics.
- Moreover, the elementary students giving a higher score for Statement 4 than high school students also indicate that sustained effort must be made to maintain interest in science that was started at a young age.
- The comments given by the students also provide insights as to what improvements could be made to the Science Explorer bus to make delivery of services more effective.
- Some of the comments worth noting are: regulating the temperature inside the bus to make it more conducive for learning; management/control of the class; more interactive activities; and use of microphone to make the lessons audible to the whole class.
- More comprehensive analysis could be done such that insights relating to each of the speakers and specific modules would be noted, which are valuable in improving the Science Explorer project. Also, a more in-depth comparison of the evaluation between elementary and high school students could be made, which could be used as input in developing strategies that are school level-specific.

Evaluation Report prepared by:

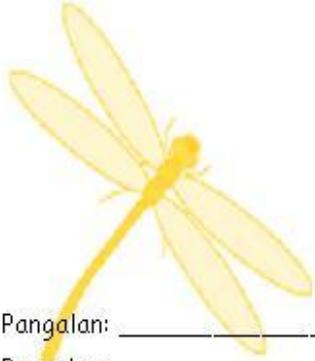
RESEARCH UNIT

S&T Manpower Education, Research and Promotions Division



SCIENCE EDUCATION INSTITUTE

Department of Science and Technology
Bicutan, Taguig City



EVALUATION FORM

Pangalan: _____ Kasarian: _____ Baitang: _____ Gulang: _____

Paaralan: _____

Tirahan: _____

A. Lagyan ng tsek (v) ang sagot na akma sa iyong palagay tungkol sa mga sumusunod na pahayag.

 <p style="text-align: center;">PAHAYAG</p>					
	Lubos na Sumasang-ayon	Sumasang-ayon	Wala Lang/ Deadma	Hindi Sumasang-ayon	Lubos na 'di Sumasang-
1. Nakatutuwa ang mga ginawa namin sa 'science explorer'.					
2. Marami akong natutunan na mga bagong kaalaman sa agham at teknolohiya.					
3. Nagkaroon ako ng interes na madagdagan pa ang aking kaalaman sa agham at teknolohiya.					
4. Nagkaroon ako ng interes na maging scientist o engineer balang araw.					
5. May natutunan ako na maaaring magamit sa pang-araw-araw na pamumuhay.					
6. Napag-alaman ko na ang agham pala ay makikita kahit sa pangkaraniwang bagay.					
7. Maraming kamangha-manghang gamit sa bus na wala sa paaralan namin.					
8. Malinaw at magaling magpaliwanag ang guro.					

B. Kumpletuhin ang mga sumusunod na pangungusap:

1. Marami akong natutunan na mga bagong kaalaman sa agham at teknolohiya tulad ng:

2. Ang pinakagusto kong paksa o parte ng mga gawain (activities) ay:

3. Ang pinakagusto kong gamit sa bus ay:

4. Sana tinalakay din ang mga sumusunod na mga paksa:

5. Higit na marami sana akong natutunan kung: _____

6. Iba pang mga mungkahi na ikagagaganda ng 'science explorer':

