ペルー遠隔教育中学校におけるテレビの
教育効果の調査報告

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The Effects of Instructional Video in Distance Learning
in Junior High Schools in Peru

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この報告は平成12年度～14年度科学研究補助金基盤研究(B) 2 (課題番号12571042, 研究代表者：
赤堀正宜・桐蔭横浜大学2) として実施した「ペルー遠隔中学校におけるテレビの教育効果研究」の
主として字佐美昇三担当部分である。これまで、科研費報告書（平成15年3月）をはじめ、日本教
育メディア学会、日本映像学会で、各年次の調査結果を明らかにしたが、これだけをまとめたもの
はない。さいわい2003年9月4日7日、韓国ソウルで開かれたKAEIB（韓国教育情報・放送研究学
会）と日本教育メディア学会の合同研究会で、一口発表する機会を得たので、新資料を加えて、こ
こに新たに書き下ろした。ペルー現地での調査備忘録（邦文）を付し、今後、同様の調査される方
のご参考とする。

ABSTRACT:

This paper outlines a pilot study of Peruvian distance learning in junior high schools
(hereafter referred to as "DJHS") conducted in 2000-2002. Results of the study are as follows:
1) Multimedia lessons were effective in increased learning, especially in Mathematics.
2) Student reactions to the multimedia lessons included “interesting”, “useful” and “could
concentrate.”
3) Through the daily watching of TV in school, student's visual comprehension skills improved
significantly.

Key words: distance learning junior high school, multimedia, media literacy, Peru

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Science Research in a Foreign Country (B-2) #12571042, Akahori Masayoshi, scholar-in-charge.)
I. INTRODUCTION

1. Background

This research project was conceived in 1999, the year that Professor Masayoshi Akahori started working for the Japan International Cooperation Agency (JICA) as a supporting expert for a pilot project in distance learning for the Peruvian Ministry of Education. At this time, the authors obtained funds from the Japanese Ministry of Education to conduct an investigation into the effects of this project. During the first year in April (2000), Mr. Akahori’s research team visited a training center near Lima to meet the prospective tutors for DJHS. About 120 tutors answered our questionnaire which asked them about their careers and the problems of education in their schools. For the second year (2001) we carried out a series of case studies in Piura State in cooperation with the Peruvian Ministry of Education (MOE). This included measuring the levels of achievement for distant junior high school students, their levels of motivation, and their visual literacy abilities. During the third year (2002), we visited Jurin State and tried to confirm the effects of the Huascaran Project, a new project which is being integrated with the original junior high school distance learning project.

Usami only participated in the year 2001 - 2002 surveys conducted with Mr. Akahori and other researchers. This paper is mainly written from the scope of his research.

2. Purpose

To measure the effects of multimedia instruction at DJHSs in Peru.

3. Method

3.1 The year 2001 surveys

1) Quasi-experimental methods were employed: there were a small number of students in their usual classrooms who were tested on their scholastic achievements.

2) Questionnaires were used to measure student motivation after they had watched the video.

3) A visual literacy test was given to measure the degree of DJHS students’ recognition of visual information presented in instructional video programs. The visual literacy test was also administered in a regular junior high school in the city of Piura in order to discover any differences in visual literacy between students who were able to watch commercial TV and those who watched only instruc-

Photo 1: An antenna receiving ETV programs was installed at the Canchapunco DJHS in Junin: DJHSs in Junin were situated in the mountainous Andes area. Some schools' altitude was more than 4000 meters above sea.
3.2. The year 2002 Surveys

In the year (2002), we administered the above types of tests in 10 DJHSs in Junin State in Peru, including one model DJHS in Huacrapuquio to which three tutors were assigned and more than ten computers were installed for students to access the Internet. A typical DJHSs had one or two tutors and only one computer installed for official use. This permitted checking the validity of the previous survey in 2001.

4. Other Surveys

Field surveys employing interviews and questionnaires administered to the tutors, parents, students and the officials in charge of the Huascaran Project were widely done by Akahori Kubota, Tsunogae and Paracios. Video recording was also done. Those data compiled were reported in English and in Japanese (Akahori, 2003) The Effects of Instructional Video in Distance Learning in Secondary Schools in Peru (Report of Research, Grants-in Aid for Scientific Research, No. 12571042).

5. Limitations

As mentioned above, this was a pilot study based on quasi-experimental methods. The number of subjects employed was small (10 in La Islia and 19 in Limon). Therefore, the results of the survey cannot be universally applied to Peruvian DJHS students.

II. STUDENT ACHIEVEMENT SURVEY

1. Outline of the Research (Usami Participated)

1.1. When


1.2. Location

In 2001, two rural villages were selected: La Islia, representing a coastal area, and Limon, representing a mountainous area. Both villages were in Piura State, the northern-most state of Peru and the nearest to Ecuador. Commercial electrical power was limited in these villages and the students had not been exposed to commercial television programs. Each village had a DJHS project with appropriate number of students.

In 2002, ten DJHS in Junin State a hundred kilometers East of Lima City were surveyed. One of them was a model school under the Huascaran Project. The research team was separated after we visited the model school. Later Team P (Paracios and Usami), visited 5 DJHSs and Team Q (Kubota, Tunogae and Rosemary (from the Peruvian MOE), assisted by an interpreter, tested 4 DJHSs.

1.3. Subjects

There were a total of 29 first-year male and female students studying in these two DJHS, 10 first-year students in La Islia and 19 first-year students in Limon in 2001.

A total of 126 first-year male and female students were in ten DJHSs in Junin in 2002. The grand total of students actually tested
was 138 because of absentees.

1.4. Purpose

The aim of the survey was to measure the effects of multimedia lessons given to students in DJHS. None of the DJHS teachers specialized in all of the subjects being taught. Instead there was a tutor who supervised all the students to see that they attended regularly and followed a schedule for individual study, using texts, and workbooks. The tutor also gave the video lessons by playing the cassette of teaching materials as required by the schedule.

Our original 2001 plan was to try our research project on a small scale. Then in 2002, we would expand the project to a larger scale, to check the validity of the data at the various DJHSs with help from the Peruvian MOE. However, after 2002, the DJHS project was almost stopped. One reason was the Peruvian MOE started a new project, the Huascaran Project, and turned most energy to the new one but the scope was not clearly explained under the new regime. The supply of textbooks and video materials to DJHSs was discontinued after the middle of 2002, and tutors had to teach students directly, even though most of the subject matter was not their special areas.

1.5. Method

1.5.1 The year 2001

We used multiple-choice achievement tests to measure the effects of multimedia lessons in classes in Communication, Science and Mathematics. As the number of participants was small and the time available for the research limited, it would be rather difficult to prove differences in the effects of multimedia versus ordinary instruction based upon a “between-types” design. Therefore we employed a three-group system of analysis incorporating a “within-types design.”

1.5.2 The year 2002

We changed the original plan and used similar achievement tests as in the year 2001 to measure the retention of knowledge of the previous semester. The target lessons were again Communication, Science and Mathematics. But Science tests were not administered because of the burden for the students who were supposed to receive three tests in a day. Also we had to visit ten DJHSs in a week or so in order to obtain as much data as possible outside the testing. We visited one school in one day only instead of ten days for one school in the previous year. So we divided the team into two and each team assumed 4 to 5 DJHSs.

The design was also changed: the “within-type” was employed in ten DJHSs and newly “between-type” design was added to compare the model school with rural schools and other schools, such as in a mining town.

1.6. Hypotheses

1.6.1 The year 2001

The low scorers would benefit more from the multimedia lessons than would the high scorers.
1.6.2. The year 2002

The model school students would benefit more from the Internet and other multimedia lessons than other students in DJHSs.

The higher scorers in visual literacy tests would achieve better scores in subject-matter tests.

2. Design

2.1. The year 2001

1) A pre-test was given to check basic student knowledge regarding the content of the lesson. An interim test, used only for Mathematics, was used to measure student achievement just before the video lesson. This interim test was used to measure the effects of just the video materials upon student achievement for that particular lesson.

2) A post-test was given after the video lesson. This test measured the results of the multimedia lesson. In most studies of this type, the effect of a lesson can be measured by comparing the results of the post-test minus the results of the pre-test.

3) A retention test was given to measure how many students had remembered the material administered after the lesson. This test was given 5 to 7 days after the other tests.

2.2 The year 2002

We compared the results of the achievement tests of the model school in Huacrapuquio with those of other DJHSs in 2002. By using cross tabulations, we compared the results of academic achievements and that of the visual literacy tests.

3. Procedure

3.1 The year 2001

1) Courses

Three typical academic subjects were selected: Communication, Science and Mathematics.

2) Subjects

Ten first-year DJHS students were selected in La Islia and 19 first-year students were selected in Limon. There were no significant gender differences in academic ability.

3) Equipment and Tests

The Peruvian Ministry of Education had already installed a TV set and a VCR, both powered by solar batteries in each DJHS. The test papers were prepared in Tokyo. Each test consisted of 5 to 10 multiple-choice questions. The same questions were used in the pre-test, interim test, post-test, and retention test. However, the order of the four choices for each question was randomized in

Photo 2: The DJHS in Limon. From the left, there are an antenna, a house with decoders, a solar battery panel, and a classroom of the first year students. The students are playing soccer game.
order to prevent participants being able to answer from memory.

4) Time Frame

The pre-test for the lesson in Communication was administered on Monday August 20, 2001. The post-test was given later the same day. The Science and Mathematics tests were given in a similar manner on August 21 and 22. The following Monday, the retention tests for all the three subjects were administered.

3.2. The year 2002
3.2.1. Courses

Three typical academic subjects were selected: Communication, Science and Mathematics.

3.2.2. Subjects

One hundred nine first-year DJHS students were tested in DJHSs, which were in Huacrapiuquio, the model school, Huanchar, Casacancha, Canchapunco, Palta Rumi, Mantacara, Pucara, Corpacancha and Colpap. We disregarded the gender difference this year, as from previous year survey results.

3.2.3. Equipment and Tests

The test papers were prepared in Tokyo. Each test consisted of 20 multiple-choice questions. This time, the range of the test questions was selected from the previous semester's lessons for several weeks. Because of time constraints, 10 question items were actually used out of 20 prepared.

Since this year the research period was limited in a 10 days and visiting ten schools, we could not use the "within design" using pretests and post-tests as we employed last year. Therefore, we used the results of the first semester as the standard (hereafter K-test) and the tests we prepared in Tokyo as the retention ones (hereafter A-Test). Unfortunately, there was a big change in the personnel of the Peruvian MOE in order to start the Huascaran Project., and those who knew the DJHS project and supported our research projects were changed. Though we sent all the test questions and sent a mission explaining the research design well in advance, the reactions from MOE were obtained after we arrived in Peru, and we had to start the survey after last minute alternations.

Yet, the Peruvian Ministry of Education recommended the Junin area, where each DJHS had already installed a TV set and a VCR, both powered by commercial electricity and relatively safe from anti-government guerilla movements.

3.2.4. Time Frame

Actual research was conducted on September 3rd to the 17th, 2002. This period is the first part of the second semester in the Peruvian high school system.

4. Results of the Achievement Tests in 2001

We used ANOVA (Analysis of Variance) to examine the results of the achievement tests. There were no significant differences between the two areas, coastal and mountainous in the test scores for all three subjects. Neither were there any significant gender
differences between boys and girls. Because these area and gender differences were negligible, we divided all of the subjects into three groups based upon the pre-test results: higher, middle, and lower. The following examines the changes in these three groups after taking the multimedia lessons.

4.1. Communication Class Results

For all of the tables, T-1 is the pre-test, T-2 is the post-test and T-3 is the retention test. The maximum score for each test was ten. The Table 1 shows the average scores.

There was an interaction effect between the groups and the results of tests were at a 5% level. The results of the Analysis of Interaction were as follows:

1) For Test 1, there was a significant difference among the three groups at a 1% level.
2) For Tests 2 and 3, there were no significant differences among the three groups.
3) Multiple comparisons using the LSD (Least Significant Difference) method indicated the following:
   (1) The higher group showed no significant differences for Test 1, Test 2 or Test 3.
   (2) The middle group: There was a significant difference for the middle group at a 10% level. Test 2 was better than Test 1 at a 5% level. Test 2 and Test 3 were not significantly different from each other, as was the case between Test 1 and Test 3. The middle group learned a great deal right after the lesson, but from the results of the retention test, remembered less later on.
   (3) The lower group: As with the middle group, the results for the lower group for Test 2 were better than for Test 1. Test 2 and Test 3 were not significantly different but Test 3 was significantly better than Test 1 at a 5% level.

4.2. Science Class Results

Again, the maximum score of each test was ten. There was a significant interaction effect at a 1% level between the groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of students</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher</td>
<td>6 Persons</td>
<td>6.7(0.8)</td>
<td>7.7(1.0)</td>
<td>7.7(1.7)</td>
</tr>
<tr>
<td>Middle</td>
<td>9</td>
<td>5.0(0.0)</td>
<td>6.3(1.8)</td>
<td>6.2(2.2)</td>
</tr>
<tr>
<td>Lower</td>
<td>10</td>
<td>3.4(0.9)</td>
<td>6.2(1.7)</td>
<td>7.1(1.4)</td>
</tr>
</tbody>
</table>

(---) is Standard Deviation
Table 2 Science Class

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of students</th>
<th>T1</th>
<th>T2</th>
<th>T3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher</td>
<td>4 persons</td>
<td>8.0(0.0)</td>
<td>9.0(1.0)</td>
<td>7.5(2.2)</td>
</tr>
<tr>
<td>Middle</td>
<td>13</td>
<td>6.0(0.0)</td>
<td>8.2(1.8)</td>
<td>7.5(2.1)</td>
</tr>
<tr>
<td>Lower</td>
<td>10</td>
<td>2.8(1.6)</td>
<td>8.0(3.0)</td>
<td>7.2(2.7)</td>
</tr>
</tbody>
</table>

(---) is Standard Deviation

Table 3 Mathematics Class

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of Students</th>
<th>T-1</th>
<th>T-2</th>
<th>T-3</th>
<th>T-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher</td>
<td>7 persons</td>
<td>6.3(0.7)</td>
<td>6.9(1.8)</td>
<td>8.0(1.5)</td>
<td>8.0(1.9)</td>
</tr>
<tr>
<td>Middle</td>
<td>11</td>
<td>4.0(0.0)</td>
<td>6.9(1.6)</td>
<td>6.2(2.0)</td>
<td>7.5(1.9)</td>
</tr>
<tr>
<td>Lower</td>
<td>9</td>
<td>2.0(0.0)</td>
<td>4.9(2.8)</td>
<td>5.6(3.4)</td>
<td>7.6(2.1)</td>
</tr>
</tbody>
</table>

(---) is Standard

4.2.1. Analysis of the Interaction Effect

The higher, middle and lower groups showed significant differences at a 1% level on Test 1. For Test 2 and for Test 3, however, there were no significant differences among the groups. The three groups reached almost the same levels of achievement after Tests 2 and 3. The middle group improved a bit, at a 10% level and the lower group made a remarkable improvement at a 1% significant level.

4.2.2. Analysis of the Three Groups

1) For the higher group there were no differences among Test 1, Test 2 and Test 3 scores. 10% level.

2) For the middle group, Test 2 was better than Test 1, but there was no significant difference between Test 2 and Test 3. Tests 1 and 3 also showed no significant difference.

3) For the lower group, there was a significant difference among the three test scores at a 1% level. There was also a difference between Tests 1 and 3 at a 5% level. This was very different compared with the middle group for which Tests 2 and 3 were not significantly different.

4.3. Mathematics Class Results

The Mathematics lesson was similar to the Communication lesson with the exception of giving an interim test (new Test 2) just before the video viewing. This made the post-test, Test 3, and the retention test, Test 4. Again, the maximum score of each test was ten.

For Test 1 there was a significant difference at a 1% level among the three groups.

1) For Tests 2 through 4 there were no differences among the three groups. However, the lower group did catch up with the higher and the middle groups after the multimedia lesson.

2) The higher group showed a small change, at a 10% level of significance. The middle group and the lower groups showed remarkable improvements at a 1% level of significance.
4.3.1. Multiple Comparisons Using LSD

1) For the higher group, there were no significant differences between Tests 1 and 2, Tests 2 and 3, or Tests 3 and 4. But there were significant differences at a 5% level between Tests 1 and 3 and between Tests 1 and 4.

2) The middle group, scored the lowest on Test 1. The results of Test 2 were not significantly different from either Test 3 or Test 4. Test 3 and Test 4 scores were not significantly different either.

3) For the lower group, Test 1 was the lowest among the tests. The score for Test 2 was the same as that for Test 3. Test 4 was significantly better than Test 2 or Test 3.

The lower group’s retention test scores showed the most significant improvement.

The hypothesis was proven. The lower group improved and gained more on the tests than the other two groups. This is important for the Peruvian government as, for these under-achievers in rural areas, the need for such educational projects is more keenly felt than for the other groups.

5. Results of the Achievement Tests (A-test) in 2002

5.1. The Results of Communication Class:

Though Huacrapuquio was a model school, under the Huascaran Project, more than ten computers for student use were connected to the Internet, and while three tutors instead of usual two, the effects were not yet shown. From an additional survey on students by Mr. Tsunogae, the students’ home labor had effects upon their achievements.

The lower scorers were generally used for labor at home for more than two hours every day. Boys were employed in farming and girls to help their mother taking care of babies.

There was difference among 10 DJHSs at a 1% level of significance (Table 5). After LSD analysis (Table 6), the sign > means that a DJHS indicated vertical listing was better than a left one listed horizontally. The notation “ns” means there was no significance. Among the top group were Canchapunco DJHS (A4) and Huaylawichan (A9) which were better than other schools at a 5% level

| 1 | Huacrapuquio    | 17  | 6.3  | 1.5  | P & Q |
| 2 | Huancha        | 13  | 5.0  | 1.6  | P team|
| 3 | Casacancha     | 11  | 5.0  | 1.3  |       |
| 4 | Canchapunco    | 10  | 7.4  | 1.9  |       |
| 5 | Paltarumi      | 18  | 4.7  | 1.9  |       |
| 6 | Mantacra       | 12  | 4.6  | 1.4  | Q team|
| 7 | Colpa          | 8   | 5.9  | 1.1  |       |
| 8 | Corpacancha    | 4   | 6.3  | 1.8  |       |
| 9 | Huaylawichan   | 10  | 6.7  | 2.4  |       |
| 10| Pucara         | 6   | 5.5  | 1.3  |       |

(The maximum score is 10)
Table 5  ANOVA Table in Communication

<table>
<thead>
<tr>
<th>S. V.</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>91.7454</td>
<td>9</td>
<td>10.1939</td>
<td>3.34**</td>
</tr>
<tr>
<td>Sub</td>
<td>302.0711</td>
<td>99</td>
<td>3.0512</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>393.8165</td>
<td>108</td>
<td>+p&lt;.10</td>
<td>*p&lt;.05  **p&lt;.01</td>
</tr>
</tbody>
</table>

Table 6  The results of LSD Analysis  (Analyzed by JavaScript-STAR)

<table>
<thead>
<tr>
<th></th>
<th>A2</th>
<th>A3</th>
<th>A4</th>
<th>A5</th>
<th>A6</th>
<th>A7</th>
<th>A8</th>
<th>A9</th>
<th>A10</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 Hua</td>
<td></td>
<td>ns</td>
<td>ns</td>
<td>A1&gt;A5</td>
<td>A1&gt;A6</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>A2 Hc</td>
<td>ns</td>
<td></td>
<td></td>
<td></td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>A3 Ca</td>
<td>ns</td>
<td>A2&lt;A4</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>A4 Cp</td>
<td>A3&lt;A4</td>
<td>A4&gt;A5</td>
<td>A4&gt;A6</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>A4&gt;A9</td>
<td>ns</td>
<td></td>
</tr>
<tr>
<td>A5 Pt</td>
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<td>ns</td>
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<tr>
<td>A6 Mt</td>
<td></td>
<td></td>
<td></td>
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<td>ns</td>
<td>A6&lt;A9</td>
<td>ns</td>
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<td>A7 Cl</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ns</td>
</tr>
</tbody>
</table>

Table 7  The Math Class  (The maximum score is 10)

<table>
<thead>
<tr>
<th>DJHSs</th>
<th>N. of students</th>
<th>Mean</th>
<th>S. D.</th>
<th>Date of survey in 2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 Huacrapuquio</td>
<td>13</td>
<td>6.3</td>
<td>1.4</td>
<td>Sept. 6-7</td>
</tr>
<tr>
<td>A2 Huancha</td>
<td>13</td>
<td>6.2</td>
<td>1.5</td>
<td>Sept. 9</td>
</tr>
<tr>
<td>A3 Casacancha</td>
<td>11</td>
<td>5.8</td>
<td>1.1</td>
<td>Sept. 10</td>
</tr>
<tr>
<td>A4 Canchapunco</td>
<td>10</td>
<td>5.1</td>
<td>1.6</td>
<td>Sept. 11</td>
</tr>
<tr>
<td>A5 Paltarumi</td>
<td>18</td>
<td>5.1</td>
<td>1.5</td>
<td>Sept. 12</td>
</tr>
<tr>
<td>A6 Mantacra</td>
<td>12</td>
<td>4.6</td>
<td>2.3</td>
<td>Sept. 13</td>
</tr>
<tr>
<td>A7 Colpa</td>
<td>8</td>
<td>7.3</td>
<td>0.7</td>
<td>Sept. 9</td>
</tr>
<tr>
<td>A8 Corpacancha</td>
<td>4</td>
<td>7.8</td>
<td>1.5</td>
<td>Sept. 10</td>
</tr>
<tr>
<td>A9 Huaylawichan</td>
<td>10</td>
<td>6.4</td>
<td>1.4</td>
<td>Sept. 11</td>
</tr>
<tr>
<td>A10 Pucara</td>
<td>6</td>
<td>6.7</td>
<td>1.9</td>
<td>Sept. 12</td>
</tr>
<tr>
<td>A11 Sanfe de Uno</td>
<td>?</td>
<td></td>
<td></td>
<td>Sept. 13 Interview only</td>
</tr>
</tbody>
</table>

of significance, Huacrapuquio (A1) is on the second position by exceeding other three DJHSs at a 5% level.

5.2. The Results of the Math Class

The Math class was surveyed by the same team on the days as indicated in Table 7. The Q-team visited Sanfe de Uno but because of the field trip there were no students, only parents.

As in Communication, Math also showed a 1% of level of significance.

After the LSD analysis, we found that Huacrapuquio, the model school, was better
Table 8 ANOVA Table in Mathematics

<table>
<thead>
<tr>
<th>S. V</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>77.2910</td>
<td>9</td>
<td>8.5879</td>
<td>3.33**</td>
</tr>
<tr>
<td>Sub</td>
<td>244.8423</td>
<td>95</td>
<td>2.5773</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>322.1333</td>
<td>104</td>
<td>+p&lt;.10 *p&lt;.05 **p&lt;.01</td>
<td></td>
</tr>
</tbody>
</table>

Table 9 The results of LSD Analysis (Analyzed by JavaScript-STAR)

<table>
<thead>
<tr>
<th></th>
<th>A2</th>
<th>A3</th>
<th>A4</th>
<th>A5</th>
<th>A6</th>
<th>A7</th>
<th>A8</th>
<th>A9</th>
<th>A10</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 Hua</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>&gt;</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>A2 Hc</td>
<td></td>
<td>ns</td>
<td>ns</td>
<td>&gt;</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>A3 Ca</td>
<td></td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>A4 Cp</td>
<td></td>
<td>ns</td>
<td>ns</td>
<td>&lt;</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
<td>ns</td>
</tr>
<tr>
<td>A5 Pt</td>
<td></td>
<td>ns</td>
<td>ns</td>
<td>&lt;</td>
<td>&lt;</td>
<td>&lt;</td>
<td>&lt;</td>
<td>&lt;</td>
<td>&lt;</td>
</tr>
<tr>
<td>A6 Mt</td>
<td></td>
<td>ns</td>
<td>ns</td>
<td>&lt;</td>
<td>&lt;</td>
<td>&lt;</td>
<td>&lt;</td>
<td>&lt;</td>
<td>&lt;</td>
</tr>
<tr>
<td>A7 Cl</td>
<td></td>
<td>ns</td>
<td>ns</td>
<td>&lt;</td>
<td>&lt;</td>
<td>&lt;</td>
<td>&lt;</td>
<td>&lt;</td>
<td>&lt;</td>
</tr>
<tr>
<td>A8 Cr</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ns</td>
</tr>
<tr>
<td>A9 Hc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ns</td>
</tr>
</tbody>
</table>

more than Paltarum (A5) and Mantacra (A6). But Huacrapuquio (A1) was not significantly different compared to Huncha (A2) and other six DJHSs. Corpacancha (A8) was higher than four DJHSs and average score was the highest as in Table 7.

5.3. Conclusion for hypothesis 1 in 2002

In Corpacancha the number of students tested were only four, so no generalization could be made from this result. Though we could see that the model school had many computers and three tutors, we did not assume that the best scores in Communication and Math would be achieved. So our hypothesis was not proved.

Yet this survey is important because when the new-type schools with computers for students will show advantage, one can decide

Photo 4: The area we surveyed ranged from 3,400 - 4,400 meters. Snow covered peak can be seen in the center.

the starting point. So far, we have been doing a great many of surveys in Japan and abroad, so we have statistics to show where the beginning is: a value which is zero. For instance, the number of TV receivers at home. Suddenly, some years there were hun-
dreds of houses have a TV receiver, but we don't know when the first one was installed. Because there is no research.

6. Comparison of K-test and A-test
6.1 The result of Cross Tabulation (A-tests minus K-tests)

The K-tests were a kind of achievement test officially administered by the MOE for the all DJHSs in Peru. The highest possible score was 20. However, the test results compiled by MOE were not available to us. Some test results were not available even some of the DJHSs that we surveyed.

Anyway, we obtained K-test results from the surveyed DJHSs. Since Communication and Math results showed a similar tendency, we added the scores of the two subjects, and assumed it represents students' synthetic achievements. We doubled the score of the A-test, because its original full mark was 10, and used the results as retention tests' scores. We subtracted the results of the K-test score from the A-test score and divided the students into three groups: higher retainers, middle and lower retainers respectively.

Then we divided the students according to the location: the model school students, Group-P, in which students were mainly from rural areas, and Group Q in which students were from the mining towns and dairy (those that raise sheep and cattle) villages.

As may be seen in Table 10, in (a) the Group-P showed a greater number among

<table>
<thead>
<tr>
<th>Group</th>
<th>Total</th>
<th>A-K test results</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Lower-rate Retention 32 Students</td>
<td>Middle-rate Retention 26 Students</td>
<td>Higher-rate Retention 20 Students</td>
<td></td>
</tr>
<tr>
<td>Model school</td>
<td>8</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>P-Group (Rural)</td>
<td>50</td>
<td>27(a)</td>
<td>14</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Q-group (Mining, etc)</td>
<td>26</td>
<td>4</td>
<td>8</td>
<td>8(b)</td>
<td></td>
</tr>
<tr>
<td>Boys</td>
<td>32</td>
<td>18</td>
<td>15</td>
<td>11</td>
<td></td>
</tr>
<tr>
<td>Girls</td>
<td>42</td>
<td>14</td>
<td>11</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>TV set at home</td>
<td>54</td>
<td>23</td>
<td>18</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>No TV at home</td>
<td>24</td>
<td>9</td>
<td>8</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Heavy labor at home</td>
<td>14</td>
<td>4</td>
<td>6</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Rather heavy labor</td>
<td>32</td>
<td>16(c)</td>
<td>11</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Less heavy</td>
<td>20</td>
<td>8</td>
<td>5</td>
<td>7(d)</td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>12</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>More than 2 hours</td>
<td>37</td>
<td>18(e)</td>
<td>11</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Less than 2 hours</td>
<td>41</td>
<td>14</td>
<td>15</td>
<td>12(f)</td>
<td></td>
</tr>
<tr>
<td>Higher Visual Literacy</td>
<td>26</td>
<td>6</td>
<td>12(g)</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Middle V. L.</td>
<td>26</td>
<td>12</td>
<td>9</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Lower V. L.</td>
<td>26</td>
<td>14(h)</td>
<td>5</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>
the lower group. Among 32 students in the lower group, Group-P students were 84.4 percent of the 32 students. (Of course, the number of each cell was small but we hope to indicate that if this research is done on a larger scale, the results will be just as valid. It is hoped that this will be a goal of a larger research study in the future.)

Thus (b) out of 20 higher-rated retainers, 8 students were from Group-Q, which achieved better scores than the model school. The also remarkable cells are from (g) to (h). We will explain.

6.2 Conclusion:

We found that the higher visual literacy scorers were also higher in retention test results. Since the students had little chance to watch commercial TV, the effect of attaining higher visual skills could be attributed to the multimedia lessons at DJHSs. The more the students attain higher visual skills, the higher their academic achievement; and the reverse is true in regard to both factors. We could not conclude anything definite at this stage, but there was some relationship between the two.

"Visual Literacy" in the year 2002 has been explained above. We conducted the same survey we conducted in Piura in 2001. The results were not better than in Piura, except in some schools.

Again the model school was no better than other DJHSs. But we should wait one or two more years so that these students have a chance to get acquainted with visual instruc-
tional materials, and then examine their achievement levels.

The year 2002 result shows that the model school students were equal to students in other schools and, so to speak, they provide a good example for researchers because one can compare them with other students easily since they began from the same starting point as students in other locations. If the model school students had been too high in academic achievement and the visual literacy tests, the comparison study would have been rather difficult, if not impossible to make sense of it.

III. LEARNING MOTIVATION SURVEY

1. Procedure

We conducted a motivation-learning survey in Limon and La Islia parallel with the above achievement tests. Right after the students watched one of the videotapes, they were given questionnaires composed of eight pairs of Osgood-type Attitude Yardstick Measures. We used an ANOVA to analyze the students' motivation and applied three categories: district, subject matter, and the questionnaire items.

2. ANOVA Results

1) On the whole, there were no differences between districts. Furthermore, there were no differences among the three subjects. No interaction effect was observed, but there was a significant difference between Questions 1 through 8 at a 1% level.
2) A first group was formed from Q1 (Interesting), Q3 (Concentration) and Q6 (Usefulness). There were no differences among these three and they were rated higher than the others were. Furthermore, these were very favorable evaluations from a production staff’s point of view. A second group was formed from Q2 (Understandable), and Q4 (I want to watch more video). The third group was Q5 (Learning is easy) and Q7 (Tired). Q8 (Time passed quickly), by itself, formed the fourth group.

3) There was a significant difference between the first and second groups at a 5% level but there were no differences between the second and the third groups. And while there was a significant difference between the second and the fourth groups at a 5% level, again there were none between the third and the fourth groups.

IV. VISUAL LITERACY RESULTS

1. Purpose

The purpose of this part of the study was to measure student perception and understanding of videocassette learning materials. The subjects for this study were from two specific groups. One group was from a city where the students had prior experience with TV. The second group lived in a rural area where, except when they were in school, opportunities to view TV were rare. The city group consisted of 46 first-year junior high school students and the rural group area had 38 first-year and second-year DJHS students.

2. Schools

The rural school was the Limon DJHS in Frias and the city school was the La Alborado Junior High School with regular facilities and curriculum in Piura.

3. Method

Students in both groups watched a video and were then asked to fill out a questionnaire.

4. The Video

The theme of the video was communicating with others and was based on Peru’s multicultural and multilingual society. There are many different ethnic Indian groups in Peru and the video showed variations in languages and customs.

5. Questionnaire Format

There were ten questions in the questionnaire. Some of the questions were:

Question 2: The boy from the jungle area likes music and dance. Who do you think taught him this? (The aim of this question was to measure visual recall.)

Question 5: What does this picture mean? (The picture showed Francesco Pizarro, a conquistador. The aim of this question was to test recognition.)

Question 9: In the beginning of this video you saw four scenes from the seashore, the city, the jungle and a lake. What do these scenes mean to you? (The aim of this question was to measure the students’ understanding of the theme of the video.)
6. Hypothesis

The visual skills of students in rural areas are weaker than those of students in urban areas.

7. Administration

The video was shown and the questionnaire administered on August 25, 2001.

8. Results

The maximum score for each test was 10. The results for each question are shown in Table 4 and those for each group in Table 5. From the LSD analysis, we obtained the following:

1) There were no significant differences between the first-year city students and the second-year rural students.

2) In the rural school, the second-year students had better scores than did the first-year students, significant at a 5% level.

3) The city first-year students had better scores than did the rural first-year students, again at a 5% level of significance.

These results only partially proved our hypothesis because there were no differences in ability between the first-year students in the city and the second-year students in the rural area.

9. Analysis

Student understanding of the main theme of the video was tested in Questions 8 and Question 10. For Question 10, which was designed to elicit free responses, (which were then quantified by 3 members of the research team), the second-year students in the rural school scored 8 out of a possible 10. The first-year rural students scored 7.1 out of 10 and the first-year city students scored the lowest 6.7 out of 10. One reason for this may be that the rural students watched TV more carefully and did not view it as entertainment. Therefore, they paid greater attention to the TV while the city students, who had seen more TV were less intent in the way they viewed the program.

Table 4  Visual Literacy Survey Results

<table>
<thead>
<tr>
<th>Question School</th>
<th>Year</th>
<th>Q1</th>
<th>Q2</th>
<th>Q3</th>
<th>Q4</th>
<th>Q5</th>
<th>Q6</th>
<th>Q7</th>
<th>Q8</th>
<th>Q9</th>
<th>Q10</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>La Alborado</td>
<td>1</td>
<td>9.2</td>
<td>9.6</td>
<td>10.0</td>
<td>8.0</td>
<td>7.8</td>
<td>5.8</td>
<td>3.9</td>
<td>7.6</td>
<td>5.9</td>
<td>6.7</td>
<td>7.5</td>
</tr>
<tr>
<td>Limon</td>
<td>2</td>
<td>3.7</td>
<td>7.9</td>
<td>8.9</td>
<td>8.9</td>
<td>6.8</td>
<td>4.8</td>
<td>6.8</td>
<td>8.9</td>
<td>6.6</td>
<td>8.0</td>
<td>7.2</td>
</tr>
<tr>
<td>Limon</td>
<td>1</td>
<td>3.2</td>
<td>8.4</td>
<td>6.8</td>
<td>3.7</td>
<td>6.3</td>
<td>3.3</td>
<td>4.2</td>
<td>5.8</td>
<td>5.4</td>
<td>7.1</td>
<td>5.4</td>
</tr>
</tbody>
</table>

Table 5  Correct Answers by Category.

<table>
<thead>
<tr>
<th>School</th>
<th>Year</th>
<th>Relationships</th>
<th>Recall</th>
<th>Cognition</th>
<th>Reasoning</th>
<th>Judgment</th>
<th>Theme</th>
</tr>
</thead>
<tbody>
<tr>
<td>La Alborado</td>
<td>1</td>
<td>7.5</td>
<td>9.2</td>
<td>7.8</td>
<td>3.9</td>
<td>7.6</td>
<td>7.2</td>
</tr>
<tr>
<td>Limon</td>
<td>2</td>
<td>4.3</td>
<td>8.6</td>
<td>6.8</td>
<td>6.8</td>
<td>8.9</td>
<td>8.5</td>
</tr>
<tr>
<td>Limon</td>
<td>1</td>
<td>3.3</td>
<td>6.3</td>
<td>6.3</td>
<td>4.2</td>
<td>5.8</td>
<td>6.5</td>
</tr>
</tbody>
</table>
1) Questions 3, 4 and 5 measured recall. All three classes answered most of them correctly, but the first-year rural students scored lowest. The reason for this may be that they have had less experiences watching TV than had the other classes. They had been in school for only four months at the time of the survey.

2) Visual relationships and recall were measured in Questions 1 and 6. The students were shown three sets of pictures and asked to connect them with lines. The pictures showed speakers and festivals as well as different parts of the country. The first-year rural students exhibited the lowest level of ability.

3) In Question 7, which asked students to relate language with another form of communication, we found the average score of the first-year city students was the lowest, while the first-year and the second-year rural students scored better than city students did. We feel that once the rural first-year students have a chance to spend more time viewing TV, by the time they are promoted to the second year they will catch up with the other groups.

10. Conclusion from the Visual Literacy Study

It was natural for students from the rural school to have a lower visual ability than that of the city students. However, from our research we found that by watching TV in school every day, visual comprehension skills and an ability to understand visual information as well as to understand the main theme of a video, participants developed and increased their visual literacy.

V. IN CLOSING

In closing, in this report, based upon the above conclusions we would like to make the following recommendations:

1) Gender differences should be a part of any future study. We did not include an analysis of gender differences in this study, but we feel that this should be a topic for future research.

2) We came to the conclusion that student contact with TV and visual input at school is essential in developing an ability to learn from visual materials. Visual skills are an important part of modern life and even in areas where there is no electricity it is possible through the use of alternative forms of power, such as solar panels, to allow students to develop these skills. We hope that in our forthcoming research, we will be able to better clarify these issues. For now, however, we feel that this pilot study was a step in the right direction towards understanding the use of visual learning materials in distance education.

Submitted Aug. 14th 2003, by Shozo USAMI
imasu77@tbd.t-com.ne.jp
2002年度ベルー調査備忘録

9月3日（火曜日）
成田空港に調査ティーム集合、15時成田発。
現地時間で18時に中継地点の北米クラス発、真
夜中、ベルー・リマ着、先発のパラシュースさんが出迎えてくださる。

4日（水曜日）
午前1時ホテル着。日系人のゼンマさんが来
訪、リマやワンカイヨの話しを聞く。午後、ベ
ルーアレジストへゆき、打ち合わせ。教育省に人事
異動があり、マルガリータさんが調査地域へ同
行決定。レオさんから調査地域近況を聞く。夜、
ホテルで、今野ビクトル・日系人副会長に会
う。

5日（木曜日）
朝6時起き、7時リマ発、高速バスでワンカ
イヨに向かう。途中アンデス山脈の隕石のつる
で海抜4800メートルを越える。雪山あり（写真
4）。途中ボトシを墜ばせる銀鉱山、精錬所あり。
ホテル到着後（海抜3490m）、通訳やパラシ
ョウすさんの従兄弟の中央大学学長（武装ゲー
ドマン付き）と夕食。私は高山病で頭痛に悩む。

6日（金曜日）
午前7時。ワンカイヨ省教育事務所にゆく。
所長代理、小学科指導主事、地域担当チューター
ーと18キロ離れたHuacrapuqioの教育実験
校へ。ここが今年度の第1調査校である。付近
は広々とした荒地で畑もある。作物は年に3ヶ月
しか育たない。その真ん中の学校で周囲は雑
山が東側にも西側にも続く。学校は昨年訪問し
たフレヤグ山地の遠隔中学校より規模が大きい。
中学校は3教室、2年生用教室を間仕切りして
2・3年生が使い、最後の部屋がパソコン教室
である。

この教室を詳述すると、東側出入口のある長
辺10メートルの壁面（高さ3メーター）に
ACER（台湾製）パソコンが4台ある。1番2番
はマウス付き、3番はマウス＋テレビスピーカ
付、4番は唯一マウス＋スピーカー＋プリンタ
ー付である。北側の短辺8メートルの壁面はプ
ロジェクター用スクリーンとステナオラジカセ
があり、テレビ受像機が箱に収められている。
VCRはない。この箱の上にカラオケ付カセット
がある。南側長辺には6台のACERがマウス付き
である。教室中央部には教師用のACER（ヘッド
セット付）があり、プロジェクターに繋がっ
ている。11台は室内LANと衛星アンテナに連
絡し、生徒は好きなサイトのアクセスしたり、
互いに連絡しあえる。南側の短辺には韓国
（SUMSUNG）のデスクトップ型パソコン（キ
ーボードのみ）が5台設置されていたが電源に
つながっていなかった。ここでは電池は使
っていない。

空地に米国製の直径3メートルはあるKTI
とかいた衛星テレビ放送受信用パラボラアンテ
ナがある。その上の機器を納めた小屋の屋上に直
径1メートルのパラボラアンテナがインターネット
の送受信用である。また紅白に塗り分けられ
た30メーター以上の通信アンテナが直立し、
地域の一般家庭用テレビの再送信設備である。

中学校1年生20人【欠席3人】は個人用機が19
本、テーブルが一本。2年生18人は個人用12本、
3年生21人は9本＋ベッドとテレビ＋VCRで
ある。生徒は計59人である。

チューターは男性2人と女性1人。1年担当の
若い男性チューター、ファンさんと打合せ、
彼はかなり緊張した面持ちである。この調査に
ついて充分知らされていなかったのか、中央教
育省の役人（マルガリータさん）や地域の教育指導者が、4人も来たためである。

結局、理科を除く国語、数学の20問中10問と『生徒調査』、『ビジュアル・リテラシー・テスト』を実施することに決してもらう。久保田さんは保護者の聴き取り調査をする。その他は短時間だが生徒と遊び、写真を撮り、うろうこしを食べて、自然な関係を作り上げる。

7日（土曜日）7時、朝食、私の頭痛はかくくなかったが、角替さんが高山病と風邪で、大事を取って休養してもらう。専門官と通訳、移動チューターが相次いでホテルに到着し、昨日のHuarapuquio校へ20分のドライブ。2日目で、若いチューター、ファンさんも楽しみを増し、数学テスト終了。この間、久保田さんは3人のチューターの面接を終える。パソコン授業のデモあり。インターネットでメキシコやスペインのサイトを生徒は思い思いに、眺めている。しかし、何か課題を与えられて、共同で解決するというのではさなそうだ（写真5）。

村長が来訪、彼も拳銃装備のボーディガーがつきそう。生徒に折紙細工を教え、大人も生徒も打ち解けて、よい雰囲気になった。

お別れになると、生徒たちが手に手にアイスクリームの心棒で苦にして作った筆立てなど、彼らの作品をくれて別れを惜しんでくれる。車の後を追ってくる子もいる。

15時バラショウスさんと久保田さんと小生の3人で今後の調査地点への目印になる寺院を見に行く。ここへ道路の舗装は良い。水量の豊富な川があり、これを利用して広大な飼養漁場がある。このあたりは緑が多く、一概に乾燥地帯とはいえないのでわかる。

今度は久保田さんが高山病にかかる。運転手がユーフィリの枝を折り取ってくれ、寝室に置くと気分が良くなるという。私も一枝買って休養。ホテルのテレビは「NHKちびっ子のど自慢」を受信していた。

8日（日曜日）

午前8時、5人でホテル付属食堂で5人でチーズバーガーで朝食。昨夜半整理したHuarapuquioのデータをもとに今後の調査方法の検討会をする。下町で朝市を見る。バラショウスさんの親類一同と立派なクラブハウスで昼食会。

16時、久保田、角替、マルガリータ、通訳Perez氏のQ班が次の高地調査へ出発。電話は無く地域、携帯した無線機でも連絡ができない遠距離なので、しばしの別れである。私はようやく調子を取り戻す。

9日（月曜日）

午前7時15分、女性チューター、Lucida Trigosさんが来訪。市内に住んでいる。普段はバスで学校に通うという。コンセプション町教育事務所へ。女性所長との打ちあわせが長く感じたが、結局、公用车を使わせてくださる。男性専門官Alabardo Chavaz Abenio Carrareraの同乗で、林に囲まれたワンチャ遠離中学校（2校目）へ向かう。

もとクラブハウスだそうで、建物はしっかりしている。アンテナは衛星テレビ用の大型と高い塔に木々アンテナがついている。再送信用だ。幼稚園と併設。直ちに生徒調査＋数学、教師調査に入る。

休憩時間に父親代表と対談：せっかく良いと思い、娘の友達もきそってニューメディアのある遠離中学校に娘を上げたが2年生の後半から教材がこない。政府の朝令暮改の教育政策のせいか。機や黒板は自分たちが寄付したのに、行き先不安である。しかしすべり出しは素晴らしい。
かった。普通中学から転校した生徒もいたら
いで、成績でも負けなかった。村は2地域に区
分され、下のほうは川辺で年中作物が収穫でき
る。この辺は雨季だけ、現金収入を目指した換
金作物の栽培をするが、市場価格に左右される。
豊かとはいえない。1戸建1家族で子供は5人
くらい、若き世代の両親には教育によって子供
に将来の機会を増やすという傾向がある。
2年生には、折り紙教室を開く。
ホテルに戻り、回答のチェック整理。日系人
のゲンマさんがパートナーの建築家Julian
Contrerasとワンカイヨに出張してきた、われ
われと同じホテルに泊まる。われわれへの心遣
いもあるのだろう。Julianは母親（英語教師）
が彼にBBCを聞かせ育てたので、綺麗な英語を話す。

10日（火曜日）

午前7時、女性所長のお迎え。昨日のアラバ
ルド専門官が同行する。運転手はベテランの昨
日の人。3校目の調査は山の中のカサカンチャ
遠隔中学校（Casacancha）である。高地で小雨
のため寒い。

日曜日に見た修道院や飼の飼育場を通って、
舗装の無い急坂の山道に入る。リモンよりも道
幅が狭かに狭く、右は絶壁で深い谷間に落ち込
んでいる。やがて道は消え、草原を低速で戦車
のようにでこぼこを教えつつ進む。遙かに背の
上に城砦ののように校舎が見える。放牧の牛馬、
ロバ、羊がいて辺りがしつつ学校へ接近する。

駐車地点近くの小道をなんとか抜けて登って
校門につく。高い土塀に囲まれた要塞のような
校地でLの字型に校舎がある。東に土壁の建物
廃墟が2棟あり、北側で民族衣装のお母さん8
人が炊事をしている。【のちにこのお母さんたち
が我々の為に昼食を用意してくださっていると
判る】

生徒全員が整列して、級長が3人きりで歓
迎の挨拶を述べてくれる。9：00調査開始。1年
生はLの字型校舎の短辺にあり、女性6人男性
4人：昨日の中学校専門官が、生徒がお互いに
答を見ないようにききと座席を離して座ら
せる。座席は椅子と机が一体型である（これは、
やや珍しい）。教室は北側が6メートル、東が入
り口を含め10メートルある。テレビは北東隅に
設置されていた。

中学2年生は正方形に近い個人机が9本。東
側にホワイトボード、テレビ付きVCRが南西
隅にある。2年生に隣接して教員オフィスがあり
、受信設備やパソコンがある。ここは南北に
やや狭く、ダンボールの物置でもある。東側最
後の3年生は（2年生と合同授業中）で四角い
個人机を対面式に7本づつ置いている。

各教室前に、これまでの学校と同じく、わず
かに花が咲く花壇がある。アンテナは校門の外
にあり、高い自転車の紅白の旗桿とバラ桝、
ただし衛星受信装置は故障のまま修理されない。
トイレもなく、急な滑道を下って乾燥した川端
へ下りてゆく。桜木が多く人目を避けられるが、
女性は難儀することだろう。水道は水が出ない。
それでも民家には八木アンテナが林立し、全家
庭に電力とテレビが普及している。ただし、テ
レビ電波は満足に来ていない。

調査終了後、ビデオで東京学芸大学世田谷中
学校の授業風景を見せる。今後、単に観光でな
い旅では、こうした日本紹介のビデオを持参す
ることも大切だ。

休み時間に手品や折り紙をする。母親の心づ
くしの民族料理が出る。豚皮とジャガイモとキ
ャベツを煮たもので、ジャガイモは大きくてう
まいが量が多くて多い。他の人も残していた。
香辛料が強い。デザートは芋科植物の砂糖煮で、
少したべたが後がどうにも食べられない。せっかく作ってくださったのに気の毒である。
帰ってデータ整理。パラショウスさんは学校に寄付する文房具の見積もりや連絡、明日の打ち合わせ。昨日買い損なかった資料の受け取りに奔走する。

11日（水曜日）

ワンチャンの女性チャーターが連絡に来る。スマートな青年夫婦の運転する自家用車でハウファ町の事務所へ行く。日本から送った昨年の調査結果はこの地域まで届け出してこないらしい。中央の教育省内でなく、例会に出席する必要がある。

4校目のCanchapunco 遠隔中学校は村の中の広場を四角に建物が囲った西側の一辺にある。平家を表にした感じだ。東は古典的な住宅で、北が今泊まって住んでいる地域に向かい、かなたにアンデス山脈、南に教会と公共建築がある。

校舎は美しく2階建てで下が小学校、上が遠隔中学校だ。1年生の教室は天井が低い。ボール紙のようなボードで仮天井を作っている。中学2年3年は合併教室である。ひげ掛け毛布を我々に配られる。それほど高時は肌寒い。標本室は地元の植物、動物、土壤見本がある。この標本室だけ天井が無く、蓋葺き屋根の裏側がしかに見える。女性チャーターの1人、ナンシー先生が英語を話す。私の生徒へのおはなしは終戦後、物資不足の日本での「ある先生と白黒」の思い出である。学生時代、子ども会をした経験が生きた。

調査は理科まで3教科ができる。村の長老をはじめ、大人が集まってきて、この村の由来、神父を殺した人の隠れ里だったという。食事はモルモットのような鼠「クイ」の焼肉で結構おいしい。米はインディカ米でソースと混ぜて食べる。ジャガイモも本場なのでおいしい。村長の挨拶あり。「始めめて村を訪問した異国人」ということでサイン帖に感想を書かされる。

12日（木曜日）

午前2時からデータ作成作業をして朝となる。6時パラショウスさんから電話で「移動チャーターのカルロスさんが、今日の学校は遠い所なので、すぐ出発するように助言している」という。がたがたのタクシーで、市内の遠距離タクシーの車庫へ行き、より状態のよい車を交渉して出してしまう。移動チャーターの卡尔ロスさん、パラショウスさん、私で出発する。

天候は小雨。アンデス山脈は1万メートル以上、太平洋に近いというが中間まで深い谷にまた幾重にも山脈がある。見上げる峰はぎざぎざの岩山がたち並び、すさまじい景色だ。太平洋の大波を山のようなと形容するが、アンデスは荒海のような山なみといいたい。日本から持参の乾パンの缶詰を空けて分けける。積乱雲が風に吹き付けられ山肌に沿って絶えず上がり、垂直面のほうが平らになっている。巨人の手のひらを立てたようだ。

2時間後ようやくバンバスに到着。立派な町である。Juaja教育省で中等教育専門家とディレクターにあう。2人とも好士士であり、とても普通の自動車では無理だろう、4輪駆動のピックアップを手配してくれる。茶色の良いジャンパーを着た年配のドライバーがピックアップで
バルタルミ遠隔中学校（5校目）へ。ここも
なるほど、ぼん、ほん、ひとり山道である。
廃墟の教会の後方に校舎がある。やや凄ま
た印象。男先生、女先生がいる。
よくぞ、いらっしゃいましたとパンやチーズ
で接待される。1年生は個人を4つ合わせて
グループを作っている。校舎は北向き。床がき
しきし音を立てる。天井は床から2メートルで、
はねて歩くと頭部がぶつかりそうである。2・
3年生合同クラスで「ドイツ少年の形見のベン」
の物語をする。外へ出て、生徒と銀くしや空
き缶を物にして親睦を深める。教室では手品
や折紙、ゲームをする。年配の専門官が快く「よ
さいドン」の係りを引き上げてくれた。
女性チューターが、喧騒を避けて我々の自動
車内に座ってアンケートに記入する。前学期の
成績一覧表はコピー機が無いので、ビデオカメ
ラで撮影する。ビデオはすく、写り具合を確認
できるので、フィルムの写真機のように現像し
てみたら、ピンボケや露出不足で困ることがな
い。チューターの口頭説明も一緒に記録できて
便利だ。
帰り始めると生徒たちがめいめいの胸の記章を
外して記念に呑れる。車が動き出せば、走って
ついていていつでも手を振る。
バンバスの町に帰り着き、教育事務所長らと
郊外の館のレストランへ行くが閉鎖中。近くの
丘でゲリラ活動があったという。教育事務所前
のレストランで16時の遅い昼食。目玉焼がう
まい。
移動チューターのカルロスさんは明日の実験
校の打ち合わせで忙しい。
この町で教師たちの運動会があり、明日の学
校のチューターも偶然来ていたのだ。運動会の
結果判定に不満があると負けたティームの教師
たちが所長に早口に訴えている。暗くなってワ
ンカイヨに帰着。移動チューターのカルロスさ
んとバラショウスさんは、学校へお礼に持参す
る文房具を調べに店を回る。マーケット街は多
くの店が閉鎖して、治安が悪いとのことで、私
はホテルで待機する。テストのデータは理科以
外、記入を完成。

13日（金曜日）
朝、ホテル付属食堂で、サンドイッチとコーヒー、同じホテルにカルロス、運転手も宿泊し
て、すぐに出発。今朝は温かい地域である。ア
ンデスの山道は相変わらず、すれ違うのが恐い。
対向車の巻き上げるもうたるの砂礫のなかで
すれ違う。もし続けて2台目の対向車がくれば
砂埃の飛散のなかで正面衝突だ。山道で屈曲が
多いから、はるか彼方から対向車が走ってくる
のが見えるので大丈夫だが、警報器や速度計は
おおかた壊れている。
昨年のリモンで乗った車は、時にフロントガ
ラスが被験の巣のように裂割れ穴だらけだっ
たが、この車は幸いフロントガラスで、鏡
痕もない。リモンを思わせる街道の両側の村、
人口は百人、手をいれて3百人という。1軒
の雑貨屋がインカコーラからショールまですべ
て売っている。バスやトラックが着くと、旅人
や貨物を雑貨屋に運びこむ。放し飼いの犬、牛
馬、駄ｈが多い。マンタクラ遠隔中学校（Man-
tacr: 6校目）はここから50メートル上の山の中
とあり、つづら折りの道を登る。青年村長が同
じて私の繋ぎを持ってくる。サポテン類が
多い。「サポテンには見えなくても棘があるから
ご用心」と村長が注意してくれる。学校は見晴
らしがいい。すぐりりまで急斜面の畑である。
ここでも昨日同様、衛星テレビ受信装置が故障
したまま9ヶ月ほど放置されている。
今日は、休校日だが、カルロスさんが、チュ
ーターに依頼して、家が近い生徒を集めておい
てくれた。みなさんがとても協力的で助かる。
カルロスさんが昨曰で慣れて1年生のテスト監督を使ってくれるので、パラショウスさんと私は2・3年生相手に日本講座、生徒の寸劇やゲームに興じる風景をビデオに撮って、学校のVHSカセットにコピーして置かれる。なお、先方の喜ぶことをしてあげると、調査がうまく行く。チューター調査も終わる。

女性チューターが赤ちゃんを抱いて途中まで便乗、移動チューターのカルロスさんを車中取材する。彼は教師経験がそれほどないと研修を受けた。1か月に3-4校を巡回訪問する。1回の学校訪問で4-5日は現場にいる。ホテルのない村では、学校に宿泊する。駐在チューターの話を聞いたり、教材や評価のデータを集かったり、産休や研修で生徒不在の学校では、カルロスが授業を代行する。給食や交通費などは不十分だが、やりがいいあるという。

夕方、ワンサイヨに帰着。ラ・オロヤ方面などを巡回調査していた久保田、角替も無事に帰還して、ほっとする。学校まで片道5時間という日もあったそうだ。4千メートル地域で宿替えもあり、最初は私たちが行く予定を、久保田さんたちが自発的に交代してくれたのだ。

ロビーでパラショウス大学学長やチューターのナンシーさん、フアンさんがお別れの挨拶に来る。久保田さんたちは文房具店へ、中学生への贈り物を買いに行く。夕食はマルガリータ教育省担当官、通訳のベレツさん、ナンシー、フアンさんも参加して久しぶりに大小人数でレストランへ。ベレーの皆さんは女性も良く食べる。23時、バスタミナルから遠距離バスでリマ市に向く。リクライニング・シートを倒して思い出眠る。

14日（土曜日）
6時、うすぐるらいリマ市に到着。雨が降っている。騒ぎの運転手はパラショウス家に少年時代からかわいがられていた。先日、タクシー強盗にあって、営業時を強奪されたという。今は他人から車を借りている。早朝ホテル着。部屋に入れたので9時まで寝る。昼食はパラショウス家に御招待される。午後は荷物、データの整理。

15日（日曜日）
11時、ゲンマさん、ジュリアンさんが来る。彼らの案内で翻訳者への謝物を買いに出かける。ミラーフローレスの住宅街や太平洋を望むショッピング、レストラン街をみる。初めて都会らしい景色にふれる。ゲンマさんたちは建築デザイン事務所を経営している。とてもセンスが良く、感じがいい。
21時ホテルを出発してリマ空港へ。きびしい荷物検査があり、私は無事通過。

16日（月曜日）
午前1時リマ発、グラス午前8時着。11時（日本時間17日午前3時）同空港発、成田へ17日の日本時間15時到着、空港での待ちをいれれば空の旅は26時間以上になった。
（おわり）