# An Analysis for the Support of Junior High School/High School Teachers by the School Social Worker

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## Abstract

Teachers at High School/Junior High School in Japan are sending very busy days. They share a lot of time for managing the club actives of students. In that area, professionals can make instruction much better than teachers for the special sports like Judo and Kendo (Japanese fencing) etc. School Social Worker can coordinate the professionals out of school and can help teachers by decreasing their burden on that area. There are few related papers concerning the support of club activities by utilizing the professionals outside. Benesse Education Research Institute has made public the investigation result. Its contents are the investigation of the actual condition of instruction for learning in Junior High School and High School, and

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the teachers' consciousness. We have made hypothesis testing based on that. Furthermore, we have performed the Multi-correspondence analysis. Some interesting results were obtained.

## 1.   Introduction

Teacher at High school / Junior High School in Japan are sending very busy days in general. They share a lot of time for the management of the club activities of students. In particular, it takes time to manage the club activities for sports. In that area, professionals can make instruction much better than teachers for the special sports like Judo and Kendo (Japanese fencing) etc. School Social Worker can coordinate the professionals out of school and can help teachers by decreasing their burden on that area.

There are many researches made on School Social Workers function. For example, H. Konyuba (2011) analyzed the teacher's sparing time for club activities and pointed out that there is a difference between the sports club and the culture club. K. Yonekawa (2011) discussed the mental health support by school social worker. M.S. Kelly et al. (2010) made School Social work survey and

derived instructive insight.

But there are few related papers concerning the support of club activities by utilizing the professionals outside especially in the Japanese case.

We have searched the paper which carried out the questionnaire investigation on the activities of High School / Junior High school teachers. There was a versatile investigation results on this (http://benesse.jp/berd/center/open/report/shidou_kihon5/sc_hon/index.html ).

Benesse Education Research Institute has made an investigation on 2010 and made public the investigation result as "The 5th Basic Investigation Report about Instruction for Learning (Elementary School, Junior High School)" and "The 5th Basic Investigation Report about Instruction for Learning (High School)". Its contents are the investigation of the actual condition of instruction for learning in Junior High School and High School, and the teachers' consciousness. Its detail is stated in section 2 later.

As we could obtain the data, we have made hypothesis testing based on that. Two main issues are set as follows.

・Teachers assistance for Junior High School is much more effective than for High School in introducing the School Social Worker.

・Teachers assistance for the middle ranked performance High School is much more effective that for other ranked performance High School.

We have made 19 Null hypotheses based upon these and hypothesis testing is executed.

Furthermore, we have performed the Multi-correspondence analysis. Some interesting results were obtained.

The rest of the paper is organized as follows. Research results performed by Benesse Education Research Institute are stated in section 2. Hypothesis Testing is carried out in section 3. Multi-correspondence Analysis is conducted in section 4. Remarks are stated in section 5, which is followed by the conclusion of section 6.

## 2.    Results Performed by Bennesse Education Research Institute

Benesse Education Research Institute has made an investigation on 2010 (August through September) and made public the investigation result as "The 5th Basic Investigation Report about Instruction for Learning(Elementary School, Junior High School)" and "The 5th Basic Investigation Report about Instruction for Learning (High School)" as seen before. Its contents are the investigation of the actual condition of instruction for learning in Junior High School and High School, and the teachers' consciousness.

(1) Outline of the survey

The Outline of this survey is as follows.

A. Subjects

Junior High School:

・Principals 573 (Delivery : (1,800 , Recovery Rate : 31.8%)

・Teachers 2,827 (Delivery : 10,800, Recovery Rate : 26.2%)

High School

・Principals 830 (Delivery : 2,000, Recovery Rate : 41.5%)

・Teachers 4,791 (Delivery : 12,000, Recovery Rate : 39.9%)

B. Period

August ~ September/2010

D. Questionnaire items

・Principals:

Feature of curriculum / How to spend time, in the morning or after-school hours on week days, and during Sunday・Holiday / Examination / Policy of guideline for the student's future after leaving school / Training in the school/ How to put into practice the Ministry's official guidelines for school-teaching etc.

・Teachers :

  Teaching method・Class work / Concept for teaching / Home-work assignment / Consciousness about the guidance for the student's future after leaving school / Change of parents / Daily life / Attractiveness of teacher / Worry / Satisfaction / Future aspects etc.

(2) Main results

The main results of this questionnaire investigation are as follows. We show mainly the related parts to our themes. Table 2.1 shows the investigation results of the burden of each work.

Table 2.1: The burden of each work

| Item | | Teacher of Junior High School | Teacher of High School |
|---|---|---|---|
| How do you feel about the following issues? | | | |
| It takes too much time to guide students | Think so very much | 19.7 | 15.0 |
| | Slightly think so | 37.6 | 29.8 |
| | Slightly do not think so | 36.5 | 44.1 |
| | Do not think so | 4.1 | 7.3 |
| | No answer | 2.1 | 3.9 |
| Think it burden to guide students for their club activities | Think so very much | 25.1 | 18.4 |
| | Slightly think so | 36.1 | 30.5 |
| | Slightly do not think so | 29.0 | 39.9 |
| | Do not think so | 7.4 | 7.3 |
| | No answer | 2.4 | 3.9 |
| Think it burden to perform the jobs in the school | Think so very much | 17.4 | 15.6 |
| | Slightly think so | 37.8 | 36.4 |
| | Slightly do not think so | 39.9 | 40.4 |
| | Do not think so | 2.9 | 3.7 |
| | No answer | 1.9 | 3.8 |
| There are so many documents to make | Think so very much | 34.5 | 30.2 |
| | Slightly think so | 42.4 | 41.8 |

| | | | |
|---|---|---|---|
| | Slightly do not think so | 20.0 | 21.9 |
| | Do not think so | 1.2 | 2.3 |
| | No answer | 1.9 | 3.8 |
| Think it burden to respond to parents | Think so very much | 11.2 | 6.0 |
| | Slightly think so | 34.1 | 25.4 |
| | Slightly do not think so | 49.2 | 58.0 |
| | Do not think so | 3.5 | 6.6 |
| | No answer | 2.1 | 3.9 |
| Must work overtime or even on a holiday | Think so very much | 36.1 | 27.6 |
| | Slightly think so | 37.1 | 34.2 |
| | Slightly do not think so | 21.8 | 28.7 |
| | Do not think so | 2.8 | 5.7 |
| | No answer | 2.1 | 3.8 |

**Source** : "The 5th Basic Investigation Report about Instruction for Learning (Elementary School, Junior High School )" and "The 5th Basic Investigation Report about Instruction for Learning (High School ) " by Bennesse Education Research Institute (http://benesse.jp/berd/center/open/report/shidou_kihon5/sc_hon/index.html )

We can observe that they think their jobs to their burden to a certain extent. It may differ what kind of school they join. It can be pointed out especially for High school. We will see them in detail later.

## 3.   Hypothesis Testing

As stated above, we could obtain the detailed data. Therefore we make hypothesis testing and Multi-correspondence Analysis based on these data.

(1) Setting Hypothesis

First of all, we start from the hypothesis testing.

Two main issues are set as follows.

・Teachers assistance for Junior High School is much more effective than for High School in introducing the School Social Worker.

・Teachers assistance for the middle ranked performance High School is much more effective that for other ranked performance High School.

Next, we set the following 19 Null hypothesis

Before stating them in detail, we show the classification of High School in Japan (Figure 3.1).

①Null Hypothesis 1：Teachers at High School feel that they have as much burden as teachers at Junior High School in guiding students.

②Null Hypothesis 2：Teachers at High School feel that they have as much burden as teachers at Junior High School in instructing club activities.

③Null Hypothesis 3：Teachers at High School feel that they have as much burden as teachers at Junior High School in performing the jobs in the school.

④Null Hypothesis 4：Teachers at High School feel that they have as much burden as teachers at Junior High School in making documents.
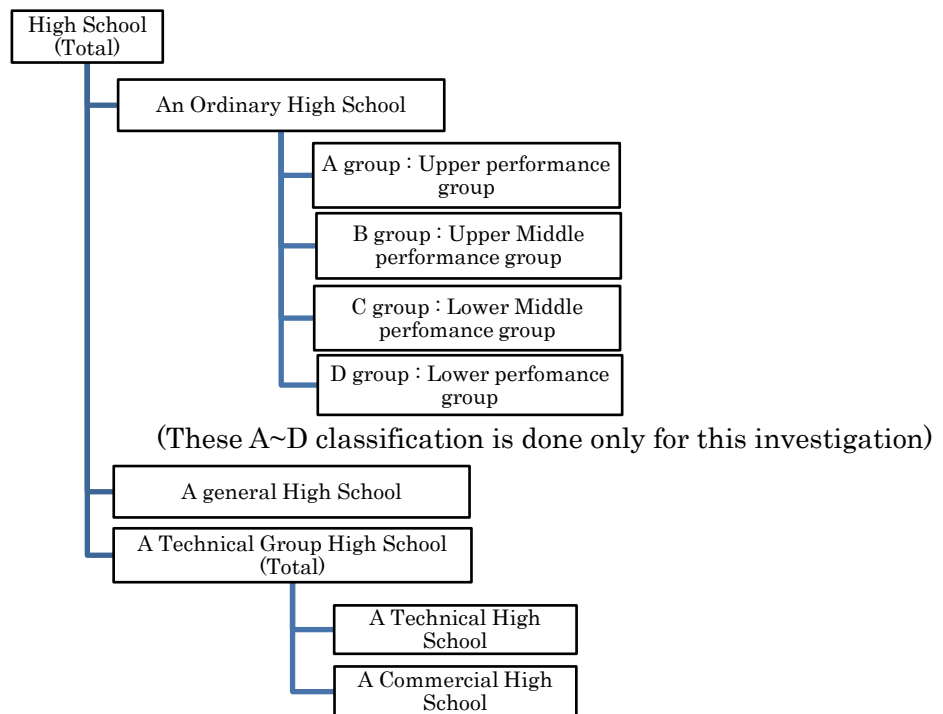
Figure 3.1: Classification of High School in Japan

⑤Null Hypothesis 5 : Teachers at High School feel that they have as much burden as teachers at Junior High School in responding to parents.

⑥Null Hypothesis 6 : Teachers at HighSchool feel that they have as much burden as teachers at Junior High School in working overtime or working on a holiday.

⑦Null Hypothesis 7 : Teachers at High School arrive at school in the morning nearly the same time with teachers at Junior High School.

⑧Null Hypothesis 8 : Teachers at High School arrive at school nearly the same time before the starting time with teachers at Junior High School.

⑨Null Hypothesis 9 : Teachers at High School leave school nearly the same time with teachers at Junior High School.

⑩Null Hypothesis 10 : Teachers at High School spend nearly the same time with teachers at Junior High School in guiding students.

⑪Null Hypothesis 11 : Teachers at High School (Total) feel that they have as much burden as teachers at Ordinary High School in instructing club activities.

⑫Null Hypothesis 12 : Teachers at High School (Total) feel that they have as much burden as teachers at Ordinary High School's A group in instructing club activities.

⑬Null Hypothesis 13 : Teachers at High School (Total) feel that they have as much burden as teachers at Ordinary High School's B group in instructing club activities.

⑭Null Hypothesis 14 : Teachers at High School (Total) feel that they have as much burden as teachers at Ordinary High School's C group in instructing club activities.

⑮Null Hypothesis 15 : Teachers at High School (Total) feel that they have as much burden as teachers at Ordinary High School's D group in instructing club activities.

⑯Null Hypothesis 16 : Teachers at High School (Total) feel that they have as much burden as teachers at general High School in instructing club activities.

⑰Null Hypothesis 17 : Teachers at High School (Total) feel that they have as much burden as teachers at Technical Group High School (Total) in instructing

club activities.

⑱Null Hypothesis 18 : Teachers at High School (Total) feel that they have as much burden as teachers at Technical High School in instructing club activities.

⑲Null Hypothesis 19 : Teachers at High School (Total) feel that they have as much burden as teachers at Commercial High School in instructing club activities.

(2) Hypothesis Testing

$\chi^2$ hypothesis Testing is executed for about teachers' consciousness. $\chi^2$ hypothesis Testing is to clarify the difference between the expected value and the observed data, which is shown in Eq.(1).

$$\chi^2 = \sum_{i=1}^{n} \frac{(O_i - E_i)^2}{E_i} \tag{1}$$

where $O_i$ is an observed data and $E_i$ is an expected value.

The results of statistical hypothesis testing are as follows.

①Null Hypothesis 1 : Teachers at High School feel that they have as much burden as teachers at Junior High School in guiding students.

Summary table concerning Null Hypothesis 1 is exhibited in Table 3.1.

Table 3.1: Summary table concerning Null Hypothesis 1

| | | Junior High School, High School (%) | | |
| --- | --- | --- | --- | --- |
| | | Junior High School | High School | Total |
| Feel it burden to guide students | Think so very much | 19.7 | 15.0 | 34.7 |
| | Slightly think so | 37.6 | 29.8 | 67.4 |
| | Slightly do not think so | 36.5 | 44.1 | 80.6 |
| | Do not think so | 4.1 | 7.3 | 11.4 |
| | No answer | 2.1 | 3.9 | 6 |
| Total | | 100 | 100.1 | 200.1 |

(There occurs the case that the total sum does not make 100% because of the rounding error.)

| Real number | Junior High School | High School | Total |
| --- | --- | --- | --- |
| Important | 1620 | 1374 | 2994 |
| Not important | 1148 | 1577 | 2725 |
| Total | 2768 | 2951 | 5719 |

("Think so very much" and "Slightly think so" is merged into "Think so" and " Slightly do not think so" and " Do not think so" is merged into "Do not think so" in this Hypothesis Testing.)

| Expectation | Junior High School | High School | Total |
| --- | --- | --- | --- |
| Important | 1449.10 | 1544.90 | 2994 |
| Not important | 1318.90 | 1406.10 | 2725 |
| Total | 2768 | 2951 | 5719 |

| Statistic ($\chi^2$ value) | 81.9786 |
|---|---|
| Rejection region (1% significance level) | Z > 6.6349 |

(Rejection region is over 6.6349 for 1% significance level and 3.841 for 5% significance level by 1 degree of freedom.)

The null hypothesis is rejected with 1% significance level. It can be said that teachers at High school do not feel so much burden as the teachers at Junior High School feel in guiding students.

②Null Hypothesis 2 : Teachers at High School feel that they have as much burden as teachers at Junior High School in instructing club activities.

Table 3.2: Summary table concerning Null Hypothesis 2

| | | Junior High School, High School (%) | | |
|---|---|---|---|---|
| | | Junior High School | High School | Total |
| Feel it burden to instruct club activities | Think so very much | 25.1 | 18.4 | 43.5 |
| | Slightly think so | 36.1 | 30.5 | 66.6 |
| | Slightly do not think so | 29.0 | 39.9 | 68.9 |
| | Do not think so | 7.4 | 7.3 | 14.7 |
| | No answer | 2.4 | 3.9 | 6.3 |
| Total | | 100 | 100 | 200 |

| Real number | Junior High School | High School | Total |
|---|---|---|---|
| Important | 1730 | 1501 | 3231 |
| Not important | 1029 | 1449 | 2478 |
| Total | 2759 | 2950 | 5709 |

| Expectation | Junior High School | High School | Total |
|---|---|---|---|
| Important | 1561.45 | 1669.55 | 3231 |
| Not important | 1197.55 | 1280.45 | 2478 |
| Total | 2759 | 2950 | 5709 |

| Statistic ($\chi^2$ value) | 81.1177 |
|---|---|
| Rejection region (1% significance level) | Z > 6.6349 |

The null hypothesis is rejected with 1% significance level. It can be said that teachers at High school do not feel so much burden as the teachers at Junior High School feel in instructing club activities.

The share of adviser of sports club is much more in Junior High School than in High school (Junior High School : 79.8 %, High School : 67.8%)
The students of Junior High School usually live near the school, therefore sports club exercise in the morning can often be seen. These may be the reason of the result.

③Null Hypothesis 3 : Teachers at High School feel that they have as much burden as teachers at Junior High School in performing the jobs in the school.

Table 3.3: Summary table concerning Null Hypothesis 3

| | | Junior High School, High School (%) | | |
|---|---|---|---|---|
| | | Junior High School | High School | Total |
| Feel it burden to perform the jobs in the school | Think so very much | 17.4 | 15.6 | 33 |
| | Slightly think so | 37.8 | 36.4 | 74.2 |
| | Slightly do not think so | 39.9 | 40.4 | 80.3 |
| | Do not think so | 2.9 | 3.7 | 6.6 |
| | No answer | 1.9 | 3.8 | 5.7 |
| Total | | 99.9 | 99.9 | 199.8 |

| Real number | Junior High School | High School | Total |
|---|---|---|---|
| Important | 1562 | 1597 | 3159 |
| Not important | 1211 | 1355 | 2566 |
| Total | 2773 | 2952 | 5725 |

| Expectation | Junior High School | High School | Total |
|---|---|---|---|
| Important | 1530.11 | 1628.89 | 3159 |
| Not important | 1242.89 | 1323.11 | 2566 |
| Total | 2773 | 2952 | 5725 |

| | |
|---|---|
| Statistic ($\chi^2$ value) | 2.8750 |
| Rejection region (9 % significance level) | $Z > 2.8744$ |

The null hypothesis is rejected with 9 % significance level. It can be said that teachers at High school do not feel so much burden as the teachers at Junior High School feel in performing the jobs in the school.

④Null Hypothesis 4 : Teachers at High School feel that they have as much burden as teachers at Junior High School in making documents.

Table 3.4: Summary table concerning Null Hypothesis 4

| | | Junior High School, High School (%) | | |
|---|---|---|---|---|
| | | Junior High School | High School | Total |
| There are too many documents to make | Think so very much | 34.5 | 30.2 | 64.7 |
| | Slightly think so | 42.4 | 41.8 | 84.2 |
| | Slightly do not think so | 20.0 | 21.9 | 41.9 |
| | Do not think so | 1.2 | 2.3 | 3.5 |
| | No answer | 1.9 | 3.8 | 5.7 |
| Total | | 100 | 100 | 200 |

| Real number | Junior High School | High School | Total |
|---|---|---|---|
| Important | 2174 | 2210 | 4384 |
| Not important | 599 | 743 | 1342 |
| Total | 2773 | 2953 | 5726 |

| Expectation | Junior High School | High School | Total |
|---|---|---|---|
| Important | 2123.09 | 2260.91 | 4384 |
| Not important | 649.91 | 692.09 | 1342 |
| Total | 2773 | 2953 | 5726 |

| Statistic ($\chi^2$ value) | 10.0988 |
|---|---|
| Rejection region (1% significance level) | $Z > 6.6349$ |

The null hypothesis is rejected with 1 % significance level. It can be said that teachers at High school do not feel so much burden as the teachers at Junior High School feel in making documents.

⑤Null Hypothesis5 : Teachers at High School feel that they have as much burden as teachers at Junior High School in responding to parents.

Table 3.5: Summary table concerning Null Hypothesis 5

| | | Junior High School, High School (%) | | |
|---|---|---|---|---|
| | | Junior High School | High School | Total |
| Feel it burden to respond to parents | Think so very much | 11.2 | 6.0 | 17.2 |
| | Slightly think so | 34.1 | 25.4 | 59.5 |
| | Slightly do not think so | 49.2 | 58.0 | 107.2 |
| | Do not think so | 3.5 | 6.6 | 10.1 |
| | No answer | 2.1 | 3.9 | 6 |

| Total | 100.1 | 99.9 | 200 |
|---|---|---|---|

| Real number | Junior High School | High School | Total |
|---|---|---|---|
| Important | 1280 | 965 | 2245 |
| Not important | 1489 | 1985 | 3474 |
| Total | 2769 | 2950 | 5719 |

| Expectation | Junior High School | High School | Total |
|---|---|---|---|
| Important | 1086.97 | 1158.03 | 2245 |
| Not important | 1682.03 | 1791.97 | 3474 |
| Total | 2769 | 2950 | 5719 |

| Statistic ($\chi^2$ value) | 109.3957 |
|---|---|
| Rejection region (1% significance level) | $Z > 6.6349$ |

The null hypothesis is rejected with 1 % significance level. It can be said that teachers at High school do not feel so much burden as the teachers at Junior High School feel in responding to parents.

Generally, teachers in Junior High School have much contact with parents than those in High School.

⑥Null Hypothesis 6 : Teachers at High School feel that they have as much burden as teachers at Junior High School in working overtime or working on a holiday.

Table 3.6: Summary table concerning Null Hypothesis 6

| | | Junior High School, High School (%) | | |
| | | Junior High School | High School | Total |
|---|---|---|---|---|
| Feel it burden to respond to parents | Think so very much | 36.1 | 27.6 | 63.7 |
| | Slightly think so | 37.1 | 34.2 | 71.3 |
| | Slightly do not think so | 21.8 | 28.7 | 50.5 |
| | Do not think so | 2.8 | 5.7 | 8.5 |
| | No answer | 2.1 | 3.8 | 5.9 |
| Total | | 99.9 | 100 | 199.9 |

| Real number | Junior High School | High School | Total |
|---|---|---|---|
| Important | 2070 | 1897 | 3967 |
| Not important | 697 | 1056 | 1753 |
| Total | 2767 | 2953 | 5720 |

| Expectation | Junior High School | High School | Total |
|---|---|---|---|
| Important | 1919 | 2048 | 3967 |
| Not important | 848 | 905 | 1753 |
| Total | 2767 | 2953 | 5720 |

| Statistic ($\chi^2$ value) | 75.0959 |
|---|---|
| Rejection region (1% significance level) | $Z > 6.6349$ |

The null hypothesis is rejected with 1 % significance level. It can be said that teachers at High school do not feel so much burden as the teachers at Junior

High School feel in working overtime or working on a holiday.

This result reflects the results of ① through ⑤ we have observed so far.

⑦Null Hypothesis 7 : Teachers at High School arrive at school in the morning nearly the same time with teachers at Junior High School.

Table 3.7: Summary table concerning Null Hypothesis 7

| | | Junior High School, High School (%) | | |
|---|---|---|---|---|
| | | Junior High School | High School | Total |
| When do you arrive at school in the morning? | 6:00 or before | 0.3 | 0.2 | 0.5 |
| | Around 6:00 | 1.1 | 0.3 | 1.4 |
| | Nearly 6:30 | 3.6 | 1.4 | 5 |
| | Around 7:00 | 18.9 | 10 | 28.9 |
| | Nearly 7:30 | 44.6 | 29.1 | 73.7 |
| | Around 8:00 | 30.5 | 57.1 | 87.6 |
| | 8:30 or after than that | 0.1 | 1 | 1.1 |
| | No answer | 0.9 | 0.8 | 1.7 |
| Total | | 99.9 | 100 | 199.9 |

| Real number | Junior High School | High School | Total |
|---|---|---|---|
| Important | 676 | 366 | 1042 |
| Not important | 2126 | 2678 | 4804 |
| Total | 2802 | 3044 | 5846 |

| Expectation | Junior High School | High School | Total |
|---|---|---|---|
| Important | 499.43 | 542.57 | 1042 |
| Not important | 2302.57 | 2501.43 | 4804 |

| Total | 2802 | 3044 | 5846 |
|-------|------|------|------|

| Statistic ($\chi^2$ value) | 145.8858 |
|---|---|
| Rejection region (1% significance level) | $Z > 6.6349$ |

The null hypothesis is rejected with 1 % significance level. It can be said that teachers at High school arrive at school in the morning not so early than teachers at Junior High School.

As High School covers wide area, teachers also come from more far area than those in Junior High School.

⑧Null Hypothesis 8 : Teachers at High School arrive at school nearly the same time before the starting time with teachers at Junior High School.

Table 3.8: Summary table concerning Null Hypothesis 8

|  |  | Junior High School, High School (%) | | |
|---|---|---|---|---|
|  |  | Junior High School | High School | Total |
| When do you arrive at school before the starting time? | 5 minutes before Commencement of Work Time | 3.5 | 4 | 7.5 |
|  | 15 minutes before | 18 | 21.3 | 39.3 |
|  | 30 minutes before | 36.5 | 38.8 | 75.3 |
|  | 1 hour before | 29.3 | 25.4 | 54.7 |
|  | Before more than that | 11.5 | 9.8 | 21.3 |
|  | No answer | 1.1 | 0.7 | 1.8 |

| Total | 99.9 | 100 | 199.9 |
|---|---|---|---|

| Real number | Junior High School | High School | Total |
|---|---|---|---|
| Important | 608 | 777 | 1385 |
| Not important | 1154 | 1080 | 2234 |
| Total | 1762 | 1857 | 3619 |

| Expectation | Junior High School | High School | Total |
|---|---|---|---|
| Important | 674.32 | 710.68 | 1385 |
| Not important | 1087.68 | 1146.32 | 2234 |
| Total | 1762 | 1857 | 3619 |

| Statistic ($\chi^2$ value) | 20.5933 |
|---|---|
| Rejection region<br>(1% significance level) | $Z > 6.6349$ |

The null hypothesis is rejected with 1 % significance level. It can be said that teachers at High school arrive at school in the starting time not so early than teachers at Junior High School.

⑨Null Hypothesis 9 : Teachers at High School go home from school nearly the same time with teachers at Junior High School.

Table 3.9: Summary table concerning Null Hypothesis 9

|  |  | Junior High School, High School (%) | | |
|---|---|---|---|---|
|  |  | Junior High School | High School | Total |
| When do you go home from school in the afternoon ? | 5:00 or before | 0.4 | 0.3 | 0.7 |
|  | Around 5:00 | 1 | 3.6 | 4.6 |
|  | Around 5:30 | 2.2 | 8.4 | 10.6 |
|  | Around 6:00 | 5.4 | 12.1 | 17.5 |
|  | Around 6:30 | 11.7 | 15.5 | 27.2 |
|  | Around 7:00 | 20.6 | 21.7 | 42.3 |
|  | Around 7:30 | 18.3 | 15.3 | 33.6 |
|  | Around 8:00 | 16.9 | 12.1 | 29 |
|  | Around 8:30 | 8.9 | 4.8 | 13.7 |
|  | Around 9:00 | 8.2 | 3.2 | 11.4 |
|  | Around 9:30 | 2.9 | 1.1 | 4 |
|  | 10:00 or after than that | 3.1 | 1.1 | 4.2 |
|  | No answer | 0.5 | 0.7 | 1.2 |
| Total | | 100.1 | 99.9 | 200 |

| Real number | Junior High School | High School | Total |
|---|---|---|---|
| Important | 1167 | 1892 | 3059 |
| Not important | 1647 | 1155 | 2802 |
| Total | 2814 | 3047 | 5861 |

| Expectation | Junior High School | High School | Total |
|---|---|---|---|
| Important | 1468.70 | 1590.30 | 3059 |
| Not important | 1345.30 | 1456.70 | 2802 |
| Total | 2814 | 3047 | 5861 |

| Statistic ($\chi^2$ value) | 249.3501 |
|---|---|
| Rejection region (1% significance level) | $Z > 6.6349$ |

The null hypothesis is rejected with 1 % significance level. It can be said that teachers at High school do not go home from school so late as teaches at Junior High School.

⑩Null Hypothesis 10 : Teachers at High School spend nearly the same time with teachers at Junior High School in guiding students.

Table 3.10: Summary table concerning Null Hypothesis 10

| | | Junior High School, High School (%) | | |
|---|---|---|---|---|
| | | Junior High School | High School | Total |
| How much time do you spend in guiding students? | Do not do | 1.8 | 16.8 | 18.6 |
| | About 30 minutes | 21.5 | 41.6 | 63.1 |
| | About 1 hour | 40 | 25.4 | 65.4 |
| | About 1 hour and a half | 16.4 | 6.4 | 22.8 |
| | About 2 hours | 11.8 | 5.5 | 17.3 |
| | About 2 hours and a half | 2.8 | 1 | 3.8 |
| | About 3 hours | 2.6 | 0.9 | 3.5 |
| | 3 hours or more than that | 2.3 | 1.1 | 3.4 |
| | No answer | 0.7 | 1.2 | 1.9 |
| Total | | 99.9 | 99.9 | 199.8 |

| Real number | Junior High School | High School | Total |
|---|---|---|---|
| Important | 2254 | 2771 | 5025 |
| Not important | 552 | 262 | 814 |
| Total | 2806 | 3033 | 5839 |

| Expectation | Junior High School | High School | Total |
|---|---|---|---|
| Important | 2414.82 | 2610.18 | 5025 |
| Not important | 391.18 | 422.82 | 814 |
| Total | 2806 | 3033 | 5839 |

| Statistic ($\chi^2$ value) | 147.9074 |
|---|---|
| Rejection region (1% significance level) | $Z > 6.6349$ |

The null hypothesis is rejected with 1 % significance level. It can be said that teachers at High school do not spend so much time as those at Junior High School in guiding students.

High school students are much more matured than Junior High School students, therefore it takes less time to guide.

⑪Null Hypothesis 11 : Teachers at High School (Total) feel that they have as much burden as teachers at Ordinary High School in instructing club activities.

Table 3.11: Summary table concerning Null Hypothesis 11

| | | High School, Ordinary High School (%) | | |
| --- | --- | --- | --- | --- |
| | | High School (Total) | Ordinary High School | Total |
| Feel it burden to instruct club activities | Think so very much | 18.4 | 19.5 | 37.9 |
| | Slightly think so | 30.5 | 31 | 61.5 |
| | Slightly do not think so | 39.9 | 38.6 | 78.5 |
| | Do not think so | 7.3 | 7 | 14.3 |
| | No answer | 3.9 | 3.9 | 7.8 |
| Total | | 100 | 100 | 200 |

| Real number | High School (Total) | Ordinary High School | Total |
| --- | --- | --- | --- |
| Important | 1501 | 1125 | 2626 |
| Not important | 1449 | 1016 | 2465 |
| Total | 2950 | 2141 | 5091 |

| Expectation | High School (Total) | Ordinary High School | Total |
| --- | --- | --- | --- |
| Important | 1521.65 | 1104.35 | 2626 |
| Not important | 1428.35 | 1036.65 | 2465 |
| Total | 2950 | 2141 | 5091 |

| Statistic ($\chi^2$ value) | 1.3757 |
| --- | --- |
| Rejection region (5% significance level) | Z＞3.8415 |

The null hypothesis is not rejected with 5 % significance level. It can be said that both feel the burden in the similar level.

⑫Null Hypothesis 12 : Teachers at High School (Total)feel that they have as much burden as teachers at Ordinary High School's A group in instructing club activities.

Table 3.12: Summary table concerning Null Hypothesis 12

| | | High School(Total), A group (%) | | |
| --- | --- | --- | --- | --- |
| | | High School (Total) | A group | Total |
| Feel it burden to instruct club activities | Think so very much | 18.4 | 16.3 | 34.7 |
| | Slightly think so | 30.5 | 32.5 | 63 |
| | Slightly do not think so | 39.9 | 39 | 78.9 |
| | Do not think so | 7.3 | 8.1 | 15.4 |
| | No answer | 3.9 | 4.1 | 8 |
| Total | | 100 | 100 | 200 |

| Real number | High School (Total) | A group | Total |
| --- | --- | --- | --- |
| Important | 1501 | 120 | 1621 |
| Not important | 1449 | 116 | 1565 |
| Total | 2950 | 236 | 3186 |

| Expectation | High School (Total) | A group | Total |
|---|---|---|---|
| Important | 1500.93 | 120.07 | 1621 |
| Not important | 1449.07 | 115.93 | 1565 |
| Total | 2950 | 236 | 3186 |

| Statistic ($\chi^2$ value) | 0.0001 |
|---|---|
| Rejection region (5% significance level) | $Z > 3.8415$ |

The null hypothesis is not rejected with 5 % significance level. It can be said that both feel the burden in the similar level.

⑬Null Hypothesis 13 : Teachers at High School (Total) feel that they have as much burden as teachers at Ordinary High School's B group in instructing club activities.

Table 3.13: Summary table concerning Null Hypothesis 13

| | | High School (Total), B group (%) | | |
|---|---|---|---|---|
| | | High School (Total) | B group | Total |
| Feel it burden to instruct club activities | Think so very much | 18.4 | 20.8 | 39.2 |
| | Slightly think so | 30.5 | 32 | 62.5 |
| | Slightly do not | 39.9 | 36.7 | 76.6 |

| | | | | |
|---|---|---|---|---|
| | think so | | | |
| | Do not think so | 7.3 | 6.4 | 13.7 |
| | No answer | 3.9 | 4.2 | 8.1 |
| Total | | 100 | 100.1 | 200.1 |

| Real number | High School (Total) | B group | Total |
|---|---|---|---|
| Important | 1501 | 515 | 2016 |
| Not important | 1449 | 420 | 1869 |
| Total | 2950 | 935 | 3885 |

| Expectation | High School (Total) | B group | Total |
|---|---|---|---|
| Important | 1530.81 | 485.19 | 2016 |
| Not important | 1419.19 | 449.81 | 1869 |
| Total | 2950 | 935 | 3885 |

| Statistic ($\chi^2$ value) | 5.0140 |
|---|---|
| Rejection region (3% significance level) | $Z > 4.7093$ |

The null hypothesis is rejected with 3 % significance level. It can be said that teachers at high school (Total) do not feel so much burden as teachers at High School's B group in instructing club activities.

Club activities in B group would be much more active than A group.

Students of A group share a lot of time for studying in order to proceed to University.

⑭Null Hypothesis 14 : Teachers at High School (Total) feel that they have as much burden as teachers at Ordinary High School's C group in instructing club activities.

Table 3.14: Summary table concerning Null Hypothesis 14

| | | High School(Total), C group (%) (%) | | |
| --- | --- | --- | --- | --- |
| | | High School (Total) | C group | Total |
| Feel it burden to instruct club activities | Think so very much | 18.4 | 21.3 | 39.7 |
| | Slightly think so | 30.5 | 33.7 | 64.2 |
| | Slightly do not think so | 39.9 | 36.7 | 76.6 |
| | Do not think so | 7.3 | 5.7 | 13 |
| | No answer | 3.9 | 2.6 | 6.5 |
| Total | | 100 | 100 | 200 |

| Real number | High School (Total) | C group | Total |
| --- | --- | --- | --- |
| Important | 1501 | 515 | 2016 |
| Not important | 1449 | 420 | 1869 |
| Total | 2950 | 935 | 3885 |

| Expectation | High School (Total) | C group | Total |
|---|---|---|---|
| Important | 1530.81 | 485.19 | 2016 |
| Not important | 1419.19 | 449.81 | 1869 |
| Total | 2950 | 935 | 3885 |

| | |
|---|---|
| Statistic ($\chi^2$ value) | 5.0140 |
| Rejection region (3% significance level) | $Z > 4.7093$ |

The null hypothesis is rejected with 3 % significance level. It can be said that teachers at high school (Total) do not feel so much burden as teachers at High School's C group in instructing club activities.

⑮Null Hypothesis 15 : Teachers at High School (Total) feel that they have as much burden as teachers at Ordinary High School's D group in instructing club activities.

Table 3.15: Summary table concerning Null Hypothesis 15

| | | High School(Total), D group (%) | | |
|---|---|---|---|---|
| | | High School (Total) | D group | Total |
| Feel it burden to instruct club activities | Think so very much | 18.4 | 15.9 | 34.3 |
| | Slightly think so | 30.5 | 25 | 55.5 |
| | Slightly do not think so | 39.9 | 44.5 | 84.4 |
| | Do not think so | 7.3 | 10.7 | 18 |

| | No answer | 3.9 | 3.9 | 7.8 |
|---|---|---|---|---|
| Total | | 100 | 100 | 200 |

| Real number | High School (Total) | D group | Total |
|---|---|---|---|
| Important | 1501 | 126 | 1627 |
| Not important | 1449 | 170 | 1619 |
| Total | 2950 | 296 | 3246 |

| Expectation | High School (Total) | D group | Total |
|---|---|---|---|
| Important | 1478.64 | 148.36 | 1627 |
| Not important | 1471.36 | 147.64 | 1619 |
| Total | 2950 | 296 | 3246 |

| Statistic ($\chi^2$ value) | 7.4375 |
|---|---|
| Rejection region (1% significance level) | $Z > 6.6349$ |

The null hypothesis is rejected with 1 % significance level. It can be said that teachers at High School's D group do not feel so much burden as teachers at High School (Total) in instructing club activities.

Teachers at D group do not feel the burden so much, though D group is a Lower performance Level.

We can observe that both studying and club activities are inactive.

⑯Null Hypothesis 16 : Teachers at High School (Total) feel that they have as much burden as teachers at general High School in instructing club activities.

Table 3.16: Summary table concerning Null Hypothesis 16

| | | High School(Total), general High School (%) | | |
|---|---|---|---|---|
| | | High School (Total) | General High School | Total |
| Feel it burden to instruct club activities | Think so very much | 18.4 | 18.9 | 37.3 |
| | Slightly think so | 30.5 | 28.6 | 59.1 |
| | Slightly do not think so | 39.9 | 40.1 | 80 |
| | Do not think so | 7.3 | 6.6 | 13.9 |
| | No answer | 3.9 | 5.7 | 9.6 |
| Total | | 100 | 99.9 | 199.9 |

| Real number | High School (Total) | General High School | Total |
|---|---|---|---|
| Important | 1501 | 108 | 1609 |
| Not important | 1449 | 106 | 1555 |
| Total | 2950 | 214 | 3164 |

| Expectation | High School (Total) | General High School | Total |
|---|---|---|---|
| Important | 1500.17 | 108.83 | 1609 |
| Not important | 1449.83 | 105.17 | 1555 |
| Total | 2950 | 214 | 3164 |

| | |
|---|---|
| Statistic ($\chi^2$ value) | 0.0137 |
| Rejection region (5% significance level) | $Z > 3.8415$ |

The null hypothesis is not rejected with 5 % significance level. It can be said that both feel the burden in the similar level.

⑰Null Hypothesis 17 : Teachers at High School (Total) feel that they have as much burden as teachers at Technical Group High School (Total) in instructing club activities.

Table 3.17: Summary table concerning Null Hypothesis 17

| | | High School(Total), Technical Group High School (Total) (%) | | |
| --- | --- | --- | --- | --- |
| | | High School (Total) | Technical Group High School (Total) | Total |
| Feel it burden to instruct club activities | Think so very much | 18.4 | 13.5 | 31.9 |
| | Slightly think so | 30.5 | 29.7 | 60.2 |
| | Slightly do not think so | 39.9 | 44.5 | 84.4 |
| | Do not think so | 7.3 | 9.4 | 16.7 |
| | No answer | 3.9 | 2.9 | 6.8 |
| Total | | 100 | 100 | 200 |

| Real number | High School (Total) | Technical Group High School (Total) | Total |
| --- | --- | --- | --- |
| Important | 1501 | 221 | 1722 |
| Not important | 1449 | 276 | 1725 |

| Total | 2950 | 497 | 3447 |
|---|---|---|---|

| Expectation | High School (Total) | Technical Group High School (Total) | Total |
|---|---|---|---|
| Important | 1473.72 | 248.28 | 1722 |
| Not important | 1476.28 | 248.72 | 1725 |
| Total | 2950 | 497 | 3447 |

| Statistic ($\chi^2$ value) | 7.0005 |
|---|---|
| Rejection region (1% significance level) | $Z > 6.6349$ |

The null hypothesis is rejected with 1 % significance level. It can be said that teachers at Technical Group High School (Total) do not feel so much burden as teachers at High School (Total) in instructing club activities.

Teachers at Technical Group High School (Total) do not feel the burden so much, though Technical Group High School (Total) is a Lower performance Level.

We can observe that both studying and club activities are inactive.

⑱Null Hypothesis 18 : Teachers at High School (Total)feel that they have as much burden as teachers at Technical High School in instructing club activities.

Table 3.18: Summary table concerning Null Hypothesis 18

| | | High School(Total), Technical High School (%) | | |
| | | High School (Total) | Technical High School | Total |
|---|---|---|---|---|
| Feel it burden to instruct club activities | Think so very much | 18.4 | 13.1 | 31.5 |
| | Slightly think so | 30.5 | 33.2 | 63.7 |
| | Slightly do not think so | 39.9 | 41.5 | 81.4 |
| | Do not think so | 7.3 | 8.7 | 16 |
| | No answer | 3.9 | 3.5 | 7.4 |
| Total | | 100 | 100 | 200 |

| Real number | High School (Total) | Technical High School | Total |
|---|---|---|---|
| Important | 1501 | 106 | 1607 |
| Not important | 1449 | 115 | 1564 |
| Total | 2950 | 221 | 3171 |

| Expectation | High School (Total) | Technical High School | Total |
|---|---|---|---|
| Important | 1495.00 | 112.00 | 1607 |
| Not important | 1455.00 | 109.00 | 1564 |
| Total | 2950 | 221 | 3171 |

| Statistic ($\chi^2$ value) | 0.7002 |
|---|---|

| Rejection region (5% significance level) | Z >3.8415 |
|---|---|

The null hypothesis is not rejected with 5 % significance level. It can be said that both feel the burden in the similar level.

⑲Null Hypothesis 19 : Teachers at High School (Total)feel that they have asmuch burden as teachers at Commercial High School in instructing club activities.

Table 3.19: Summary table concerning Null Hypothesis 19

|  |  | High School(Total), Commercial High School (%) | | |
|---|---|---|---|---|
|  |  | High School (Total) | Commercial High School | Total |
| Feel it burden to instruct club activities | Think so very much | 18.4 | 12.2 | 30.6 |
|  | Slightly think so | 30.5 | 28.7 | 59.2 |
|  | Slightly do not think so | 39.9 | 47.6 | 87.5 |
|  | Do not think so | 7.3 | 8.5 | 15.8 |
|  | No answer | 3.9 | 3 | 6.9 |
| Total | | 100 | 100 | 200 |

| Real number | High School (Total) | Commercial High School | Total |
|---|---|---|---|
| Important | 1501 | 67 | 1568 |
| Not important | 1449 | 92 | 1541 |
| Total | 2950 | 159 | 3109 |

| Expectation | High School (Total) | Commercial High School | Total |
|---|---|---|---|
| Important | 1487.81 | 80.19 | 1568 |
| Not important | 1462.19 | 78.81 | 1541 |
| Total | 2950 | 159 | 3109 |

| | |
|---|---|
| Statistic ($\chi^2$ value) | 4.6133 |
| Rejection region (4% significance level) | $Z > 4.2179$ |

The null hypothesis is rejected with 4 % significance level. It can be said that teachers at Commercial High School do not feel so much burden as teachers at High School (Total) in instructing club activities.

Teachers at Commercial High School do not feel the burden so much, though Commercial High School is a Lower performance Level.

We can observe that both studying and club activities are inactive.

## 4.   Multi-Correspondence Analysis

The result of Multi-Correspondence Analysis for Junior High School and High School is exhibited in Figure 4.1.
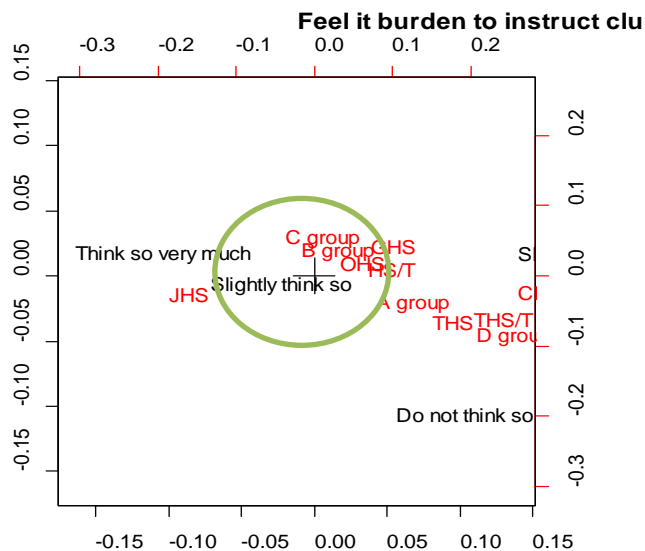
Figure 4.1: The Result of Multi-correspondence Analysis

(Junior High School and High School)

Here,

HS/T: High School (Total), OHS: Ordinary High School, GHS: General High School, THS/T: Technical Group High School (Total), THS: Technical High School, CHS: Commercial High School, JHS: Junior high school

"Feel it burden to instruct club activities", "Junior High School", "Think it very much" and "Slightly think so" are all close together, which we could also see from the Hypothesis Testing.

"Slightly think so", "B group" and "C group" are also located closely, therefore we picked up only High School data and made Multi-correspondence Analysis (Figure 4.2).
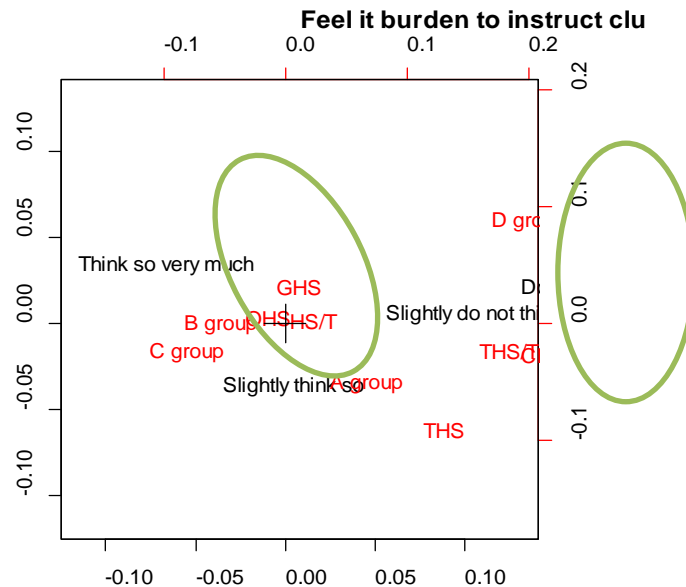
Figure 4.2: The Result of Multi-correspondence Analysis (High School (Total))

As we have picked up only High School case, we can observe the relation among High School members clearly.

"B group" and "C group" are located nearly to "Think it very much" and "Slightly think so", which make one group.

"Commercial High School" and "D group" are located nearly to "Do not think so" and build one group.

These are nearly the same results obtained from Hypothesis Testing. Items are graphically located in Multi-correspondence Analysis, which leads us to an easy understanding.

## 5.    Remarks

(1) The Results for Hypothesis Testing

Null Hypothesis 1 thorough 10 are set for the burden of works about teachers at High School and Junior High School. Null hypothesis are all rejected. It was revealed that teachers at Junior High School felt the burden of works much more than those at High School.

Null Hypothesis 11 through 19 are set for the burden of works among teachers at High School.

Null Hypotheses 13 (B group),14 (C group),15 (D group),17 (Technical High School (Total)) are rejected, while others (11 (Ordinary High School), 12 (A group), 16 (General High School) and 18 (Technical High School)) are not rejected. These are exhibited in Table 6.1.

Table 6.1: Classification

|  | Null Hypothesis is rejected | Null Hypothesis is not rejected |
|---|---|---|
| Feel the burden heavy | B(13), C(14) |  |
| Feel the burden to the average level |  | Ordinary High School (11), A (12), General High School (16), Technical High School(18) |
| Feel the burden light | D(15), Technical Group High School (Total) (17), Commercial High School (19) |  |

When the Null Hypothesis is rejected, it means that the burden is not nearly the same with the High School (Total), therefore it is split into two groups (more burden or less burden).

We can observe the following three groups.

Feel the burden heavy : B, C

Feel the burden to the average level : Ordinary High School, A, General High School, Technical High School

Feel the burden : D, Technical Group High School (Total), Commercial High School

It can be said that B and C are the groups where club activities are active, while these for D and Commercial High School are inactive.

Students in the middle level performance High School have less burden for proceeding to university and club activities are performed actively, while students in the lower level performance High School are inactive both studying and club activities.

It can be said that placing School Social Worker to each school is most effective to Junior High School and then B and C groups in High School follow. That will make good support to the teachers.

From another viewpoint, it may be possible to activate students if characteristic support is performed to D group and commercial High School.

(2) Multi-Correspondence Analysis

We could get nearly the same results with those of the Hypothesis Testing.

・The burden of the teacher at Junior High School is heavier than those at High School

・The burden of B and C group at High School is relatively heavy and those of D group and Commercial High School is relatively low. This analysis has a characteristic that it is shown by graphical charts and is very easy to understand.

## 6.  Conclusion

Teachers at High School/Junior High School in Japan are sending very busy days. They share a lot of time for managing the club actives of students. In that area, professionals can make instruction much better than teachers for the special sports like Judo and Kendo (Japanese fencing) etc.

School Social Worker can coordinate the professionals out of school and can help teachers by decreasing their burden on that area. There are few related papers concerning the support of club activities by utilizing the professionals outside. Benesse Education Research Institute has made public the investigation result. Its contents are the investigation of the actual condition of instruction for learning in Junior High School and High School, and the teachers' consciousness. We have made hypothesis testing based on that. Furthermore, we have performed the Multi-correspondence analysis. Instructive results were obtained.

We are planning to make a questionnaire investigation focusing on teachers' instruction of club activities at High School and search the necessity of School

Social Worker much further. Various cases should be investigated here after.

# References

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