

Hypothesis Testing Results for the Questionnaire Investigation in the Support of School Teachers

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Abstract

High School teachers in Japan are sending very busy days on their daily works including teaching, support for the club activities and deskwork. Among them, they share a lot of time for managing the club actives of students compared with other countries. 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. In this paper, a questionnaire investigation is executed to the high school teachers at Miyagi Prefecture in Japan in order to clarify their current condition and their consciousness, and to seek the possibility of utilizing school social worker for their support. Hypothesis testing was executed based on that. Some interesting and instructive results were obtained.

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1 Introduction

Teacher at High school / Junior High School in Japan are sending very busy days in general on their daily works including teaching, support for the club activities and deskwork. Among them, they share a lot of time for managing the club activities of students compared with other countries. 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.

OECD (Organisation for Economic Co-operation and Development) has released the investigation report of "Teaching And Learning International Survey (TALIS)" on June 25/2014. It is reported that the teacher's total working hours for a week in Japan were the most among 33 countries. Main data are as follows.

/Teacher's total working hours for a week in Japan: 53.9 (Average: 38.3)

/ Teacher's working hours of support for the club activities for a week in Japan: 7.7(Average: 2.1)

/Teacher's working hours of deskwork for a week in Japan: 5.5 (Average: 2.9)

/Teacher's teaching hours for a week in Japan: 17.7 (Average: 19.3)

Teacher's working hours of support for the club activities were nearly triple, and those of deskwork double compared with the average, while the teaching hours were less than those of the average. They are too busy for the support of the club activities and deskwork, which causes bad influence on their teaching activities.

Although there are some related papers as these, but there are few related papers concerning the support of club activities by utilizing the professionals outside especially in the Japanese case.

In this paper, a questionnaire investigation is executed to the high school teachers at Miyagi Prefecture in Japan in order to clarify their current condition and their consciousness, and to seek the possibility of utilizing school social worker for their support. Hypothesis testing was executed 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 than for other ranked performance High School.

We have made 14 Null hypotheses based upon these and hypothesis testing is executed.

Some interesting results were obtained.

The rest of the paper is organized as follows. Outline of questionnaire investigation is stated in section 2. Hypothesis Testing is carried out in section 3, which is followed by the Remarks of section 4.

2 Outline and the Basic Statistical Results of the Questionnaire Research

2.1 Outline of the Questionnaire Research

We make a questionnaire investigation for the Support of High School Teachers

by the School Social Worker. The outline of questionnaire research is as follows. Questionnaire sheet is attached in Appendix.

- (1) Scope of investigation : High School Teacher, 5 High Schools in Miyagi Prefecture, Japan
- (2) Period : January ~ March 2015
- (3) Method : Leave until called for
- (4) Collection : Number of distribution 309
Number of collection 167(collection rate 54.0%)
Valid answer 167

2.2 Basic Statistical Results

Now, we show the main summary results by single variable (Table 2.1).

Table 2.1: Main summary results

	Answer	Number of answerers	%
Q4-1Sex	Male	108	65.9
	Female	56	34.1
	Total	164	100.0
Q4-2Age	20~	38	23.2
	30~	40	24.4
	40~	48	29.3
	50~	31	18.9
	60~	7	4.3
	Total	164	100.0
Q4-3 Position	Deputy Principal	1	0.6
	A person in charge of educational affairs	22	13.3
	Teacher	97	58.4
	Lecturer	38	22.9

	Assistant	2	1.2
	Miscellaneous	6	3.6
	Total	166	100.0
Q4-4 Experience as a teacher	Within 1 year	7	4.3
	1~2 years	7	4.3
	3~4 years	19	11.7
	5~9 years	31	19.0
	More than 10 years	99	60.7
	Total	163	100.0
	Q4-5 How many years are you working for the present school?	Within 1 year	10
1~2 years		8	4.8
3~4 years		26	15.7
5~9 years		37	22.3
More than 10 years		85	51.2
Total		166	100.0
Q4-7 Are you married?		Single	63
	Married	102	61.8
	Total	165	100.0

The summary results concerning club activities are as follows (Table 2.2).

Table 2.2: Summary results concerning club activities

	Answer	Number of answerers	%
Q1-2-2-3 How about the sort of job?	Adviser	119	72.1
	Deputy Adviser	34	20.6
	Miscellaneous	12	7.3
	Total	165	100.0
Q1-2-2-4 Is the club strong enough to participate in the national sports match?	Yes	42	25.5
	Cannot say either	26	15.8
	No	97	58.8
	Total	165	100.0
Q1-2-2-5 Is the club activity active?	Yes	90	54.2
	Cannot say either	55	33.1
	No	21	12.7
	Total	166	100.0
Q1-2-2-6 How long a time do you	0~10	1	0.6
	11~20	22	13.7
	21~30	17	10.6

spare for the club activity (Include moving time)	31~40	14	8.7
	41~50	10	6.2
	51~60	13	8.7
	61~70	9	8.1
	71~80	18	5.6
	81~90	8	11.2
	91~100	14	5.0
	101~110	1	8.7
	111~120	8	0.6
	121~130	1	5.0
	141~150	5	0.6
	161~170	1	1.9
	171~180	3	0.6
	191~200	1	0.6
311~320	1	100.0	
Q2-1 Feel it burden to teach	Think it very much	5	3.0
	Slightly think so	21	12.8
	Cannot say either	35	21.3
	Slightly do not think so	69	42.1
	Do not think so	34	20.7
	Total	164	100.0
Q2-2 Feel it burden to prepare for teaching	Think it very much	9	5.5
	Slightly think so	29	17.6
	Cannot say either	37	22.4
	Slightly do not think so	62	37.6
	Do not think so	28	17.0
	Total	165	100.0
Q2-3 Feel it burden to instruct for learning	Think it very much	6	3.7
	Slightly think so	15	9.1
	Cannot say either	44	26.8
	Slightly do not think so	63	38.4
	Do not think so	36	22.0
	Total	164	100.0
Q2-4 Feel it burden to handle the students' performance	Think it very much	7	4.3
	Slightly think so	30	18.3
	Cannot say either	54	32.9
	Slightly do not think so	48	29.3
	Do not think so	25	15.2

	Total	164	100.0
Q2-5 Feel it burden to guide students	Think it very much	18	11.0
	Slightly think so	33	20.1
	Cannot say either	54	32.9
	Slightly do not think so	39	23.8
	Do not think so	20	12.2
	Total	164	100.0
Q2-6 Feel it burden to guide club activities	Think it very much	16	9.8
	Slightly think so	29	17.8
	Cannot say either	37	22.7
	Slightly do not think so	38	23.3
	Do not think so	43	26.4
	Total	163	100.0
Q2-8 Feel it burden to manage the class	Think it very much	7	4.3
	Slightly think so	26	16.0
	Cannot say either	58	35.8
	Slightly do not think so	39	24.1
	Do not think so	32	19.8
	Total	162	100.0
Q2-9 Feel it burden to deal with meeting, advance arrangement	Think it very much	15	9.1
	Slightly think so	22	13.4
	Cannot say either	57	34.8
	Slightly do not think so	46	28.0
	Do not think so	24	14.6
	Total	164	100.0
Q2-10 Feel it burden to deal with parents	Think it very much	8	4.9
	Slightly think so	29	17.7
	Cannot say either	53	32.3
	Slightly do not think so	47	28.7
	Do not think so	27	16.5
	Total	164	100.0
Q3-1 Worthwhile to guide club activities	Think it very much	38	22.9
	Slightly think so	48	28.9
	Cannot say either	52	31.3
	Slightly do not think so	13	7.8
	Do not think so	15	9.0

	Total	166	100.0
Q3-2 It is better for the professionals to guide club activities	Think it very much	86	51.8
	Slightly think so	45	27.1
	Cannot say either	26	15.7
	Slightly do not think so	2	1.2
	Do not think so	7	4.2
	Total	166	100.0
Q3-3 I do not know the club field precisely that I take charge of	Think it very much	37	22.3
	Slightly think so	14	8.4
	Cannot say either	21	12.7
	Slightly do not think so	18	10.8
	Do not think so	76	45.8
	Total	166	100.0
Q3-5 Quite tired because of the activity on holiday	Think it very much	26	15.8
	Slightly think so	39	23.6
	Cannot say either	41	24.8
	Slightly do not think so	29	17.6
	Do not think so	30	18.2
	Total	165	100.0
Have a hard time for the technical guidance (Q3-6)	Think it very much	15	9.1
	Slightly think so	36	21.8
	Cannot say either	50	30.3
	Slightly do not think so	25	15.2
	Do not think so	39	23.6
	Total	165	100.0
Have a hard time for the mental guidance (Q3-7)	Think it very much	22	13.3
	Slightly think so	53	32.1
	Cannot say either	50	30.3
	Slightly do not think so	20	12.1
	Do not think so	20	12.1
	Total	165	100.0
Want to have a person to consult with in guiding club activities (Q3-8)	Think it very much	30	18.1
	Slightly think so	38	22.9
	Cannot say either	54	32.5
	Slightly do not think so	21	12.7
	Do not think so	23	13.9
	Total	166	100.0

Next, the clubs that teachers are in charge of are as follows (Figure 2.1,2.2).

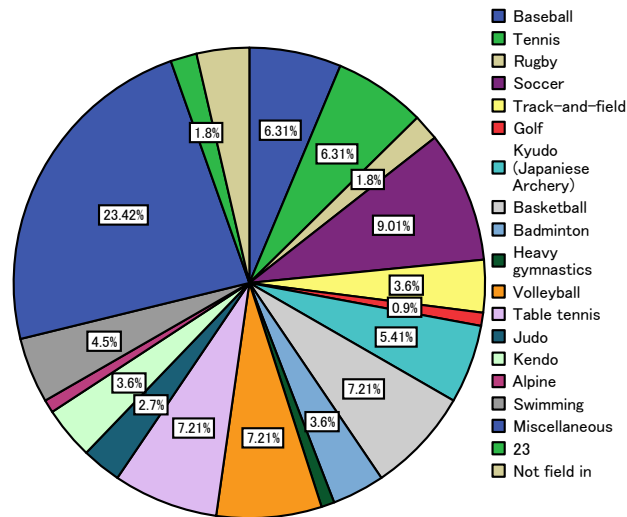


Figure 2.1: Sports Club (Q 1-2-1)

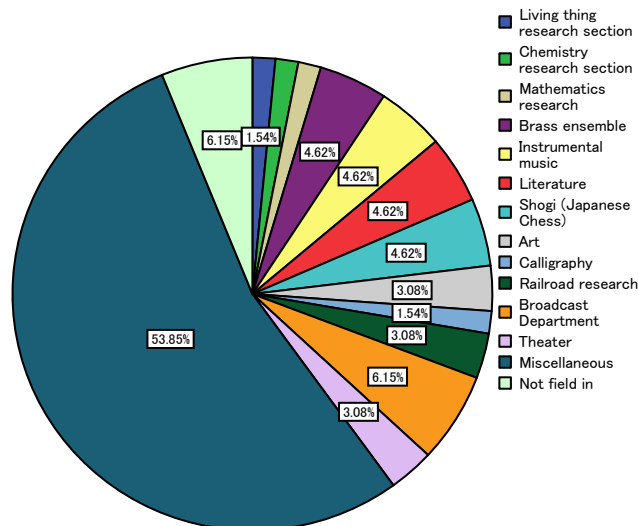


Figure 2.2: Culture Club (Q1-2-2)

3 Hypothesis Testing

Hereinafter we make hypothesis testing based upon the questionnaire investigation data.

(1) Setting Hypothesis

First of all, we start from the hypothesis testing.

Two main issues are set as follows.

A When they have a hard time in guiding club activities, they think that they want to have a person to consult with or it is better for the professionals to guide club activities.

B When they feel worthwhile to guide club activities, they feel less burden for it.

Next, we set the following 14 themes (sub issues) before setting Null hypothesis.

A-1 If they feel it burden to teach, they think that it is better for the professionals to guide club activities.

A-2 If they feel it burden to teach, they think that they cannot share enough time to prepare for teaching because of the workload for the guidance of club activities.

A-3 When they have a hard time for the technical guidance, they think that they want to have a person to consult with in guiding club activities.

A-4 When they have a hard time for the mental guidance, they think that they want to have a person to consult with in guiding club activities.

A-5 When they do not know the club field precisely, they think that they want to have a person to consult with in guiding club activities.

A-6 If they feel that they cannot share enough time to prepare for teaching because of the workload for the guidance of club activities, they think that they want to have a person to consult with in guiding club activities.

A-7 If they feel quite tired because of the activity on holiday, they think that they want to have a person to consult with in guiding club activities.

A-8 When they have a hard time for the mental guidance, they think that it is better for the professionals to guide club activities.

B-1 In the technical course, teachers in charge of club activities spare a lot of time.

B-2 Where the club activities are active, teachers in charge of club activities spare a lot of time.

B-3 Where the club is strong enough to participate in the national sports match, they feel worthwhile to guide club activities.

B-4 Even when they feel worthwhile to guide club activities, they feel it burden to guide club activities.

B-5 Even when they feel worthwhile to guide club activities, they think that it is better for the professionals to guide club activities.

B-6 If the club activity is active, they feel worthwhile to guide club activities.

Now, we set the following 14 Null hypotheses.

Null Hypothesis

A-1 Even if they feel it burden to teach, they do not think that it is better for the professionals to guide club activities.

A-2 Even if they feel it burden to teach, they do not think that they cannot share enough time to prepare for teaching because of the workload for the guidance of club activities.

A-3 Even when they have a hard time for the technical guidance, they do not think that they want to have a person to consult with in guiding club activities.

A-4 Even when they have a hard time for the mental guidance, they do not think that they want to have a person to consult with in guiding club activities.

A-5 Even when they do not know the club field precisely, they do not think that they want to have a person to consult with in guiding club activities.

A-6 Even if they feel that they cannot share enough time to prepare for teaching because of the workload for the guidance of club activities, they do not think that they want to have a person to consult with in guiding club activities.

A-7 Even if they feel quite tired because of the activity on holiday, they do not think that they want to have a person to consult with in guiding club activities.

A-8 Even when they have a hard time for the mental guidance, they do not think

that it is better for the professionals to guide club activities.

B-1 In the technical course, teachers in charge of club activities do not spare a lot of time.

B-2 Even if where the club activities are active, teachers in charge of club activities do not spare a lot of time.

B-3 Even if where the club is strong enough to participate in the national sports match, they do not feel worthwhile to guide club activities.

B-4 When they feel worthwhile to guide club activities, they do not feel it burden to guide club activities

B-5 When they feel worthwhile to guide club activities, they do not think that it is better for the professionals to guide club activities.

B-6 Even if the club activity is active, they do not feel worthwhile to guide club activities.

(2) Hypothesis Testing

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

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

Where O_i is an observed data and E_i is an expected value.

The results of statistical hypothesis testing are as follows.

Null Hypothesis A-1 : Even if they feel it burden to teach, they do not think that it is better for the professionals to guide club activities.

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

Table 3.1: Summary table concerning Null Hypothesis A-1

		Q 3-2						Total
		Think it very much	Slightly think so	Cannot say either	Slightly do not think so	Do not think so	Not filled in	
Q 2-1	Think it very much	2	2	0	0	1	0	5
	Slightly think so	16	4	1	0	0	0	21
	Cannot say either	16	11	8	0	0	0	35
	Slightly do not think so	38	19	8	1	3	0	69
	Do not think so	13	9	8	1	3	0	34
	Not filled in	1	0	1	0	0	1	3
Total		86	45	26	2	7	1	167

Real number	Think so	Do not think so	Total
Think so	24	1	25
Do not think so	79	8	87
Total	103	9	112

Expectation	Think so	Do not think so	Total
Think so	22.99107143	2.008928571	25
Do not think so	80.00892857	6.991071429	87
Total	103	9	112

Statistic (χ^2 value)	0.709309725
Rejection region (1% significance level)	$Z < 6.6349$

(Rejection region is over 6.6349 for 1% significance level, 3.841 for 5%

significance level, 3.537 for 6% significance level and 2.874 for 9% significance level by 1 degree of freedom.)

The null hypothesis is not rejected. It can be said that even if they feel it burden to teach, they do not think that it is better for the professionals to guide club activities.

Null Hypothesis: A-2 Even if they feel it burden to teach, they do not think that they cannot share enough time to prepare for teaching because of the workload for the guidance of club activities.

Table 3.2: Summary table concerning Null Hypothesis A-2

		Q 3-4						Total
		Think it very much	Slightly think so	Cannot say either	Slightly do not think so	Do not think so	Not filled in	
Q 2-1	Think it very much	1	1	0	1	2	0	5
	Slightly think so	2	6	6	2	5	0	21
	Cannot say either	2	5	19	3	6	0	35
	Slightly do not think so	1	9	20	28	10	1	69
	Do not think so	4	1	3	8	18	0	34
	Not filled in	0	1	0	0	1	1	3
Total		10	23	48	42	42	2	167

Real number	Think so	Do not think so	Total
Think so	10	10	20
Do not think so	15	64	79
Total	25	74	99

Expectation	Think so	Do not think so	Total
Think so	5.050505051	14.94949495	20
Do not think so	19.94949495	59.05050505	79
Total	25	74	99

Statistic (χ^2 value)	8.132021895
Rejection region (1% significance level)	$Z > 6.6349$

The null hypothesis is rejected with 1% significance level. It can be said that if they feel it burden to teach, they think that they cannot share enough time to prepare for teaching because of the workload for the guidance of club activities.

Null Hypothesis: A-3 Even when they have a hard time for the technical guidance, they do not think that they want to have a person to consult with in guiding club activities.

Table 3.3: Summary table concerning Null Hypothesis A-3

		Q 3-6						Total
		Think it very much	Slightly think so	Cannot say either	Slightly do not think so	Do not think so	Not filled in	
Q 3-8	Think it very much	8	3	2	1	1	0	15
	Slightly think so	4	19	11	1	1	0	36
	Cannot say either	11	10	22	4	3	0	50
	Slightly do not think so	1	3	9	10	2	0	25
	Do not think so	6	3	9	5	16	0	39

Not filled in	0	0	1	0	0	1	2
Total	30	38	54	21	23	1	167

Real number	Think so	Do not think so	Total
Think so	34	4	38
Do not think so	13	33	46
Total	47	37	84

Expectation	Think so	Do not think so	Total
Think so	21.26190476	16.73809524	38
Do not think so	25.73809524	20.26190476	46
Total	47	37	84

Statistic (χ^2 value)	31.63776757
Rejection region (1% significance level)	$Z > 6.6349$

The null hypothesis is rejected with 1% significance level. It can be said that when they have a hard time for the technical guidance, they think that they want to have a person to consult with in guiding club activities.

Null Hypothesis:A-4 Even when they have a hard time for the mental guidance, they do not think that they want to have a person to consult with in guiding club activities.

Table 3.4: Summary table concerning Null Hypothesis A-4

		Q 3-8						Total
		Think it very much	Slightly think so	Cannot say either	Slightly do not think so	Do not think so	Not filled in	
Q 3-7	Think it very much	7	3	6	1	5	0	22
	Slightly think so	7	23	15	6	2	0	53
	Cannot say either	10	8	25	5	2	0	50
	Slightly do not think so	3	4	3	8	2	0	20
	Do not think so	3	0	4	1	12	0	20
	Not filled in	0	0	1	0	0	1	2
Total		30	38	54	21	23	1	167

Real number	Think so	Do not think so	Total
Think so	40	14	54
Do not think so	10	23	33
Total	50	37	87

Expectation	Think so	Do not think so	Total
Think so	31.03448276	22.96551724	54
Do not think so	18.96551724	14.03448276	33
Total	50	37	87

Statistic (χ^2 value)	16.05569206
Rejection region (1% significance level)	Z > 6.6349

The null hypothesis is rejected with 1% significance level. It can be said that when

they have a hard time for the mental guidance, they think that they want to have a person to consult with in guiding club activities.

Null Hypothesis: A-5 Even when they do not know the club field precisely, they do not think that they want to have a person to consult with in guiding club activities.

Table 3.5: Summary table concerning Null Hypothesis A-5

		Q 3-8						Total
		Think it very much	Slightly think so	Cannot say either	Slightly do not think so	Do not think so	Not filled in	
Q 3- 3	Think it very much	13	7	10	2	5	0	37
	Slightly think so	1	2	9	1	1	0	14
	Cannot say either	4	6	9	0	2	0	21
	Slightly do not think so	1	7	5	4	1	0	18
	Do not think so	11	16	21	14	14	0	76
	Not filled in	0	0	0	0	0	1	1
Total		30	38	54	21	23	1	167

Real number	Think so	Do not think so	Total
Think so	23	9	32
Do not think so	35	33	68
Total	58	42	100

Expectation	Think so	Do not think so	Total
Think so	18.56	13.44	32
Do not think so	39.44	28.56	68
Total	58	42	100

Statistic (χ^2 value)	3.719030716
Rejection region (6% significance level)	$Z > 3.537385$

The null hypothesis is rejected with 6% significance level. It can be said that when they do not know the club field precisely, they think that they want to have a person to consult with in guiding club activities.

Null Hypothesis: A-6 Even if they feel that they cannot share enough time to prepare for teaching because of the workload for the guidance of club activities, they do not think that they want to have a person to consult with in guiding club activities.

Table 3.6: Summary table concerning Null Hypothesis A-6

		Q 3-8						Total
		Think it very much	Slightly think so	Cannot say either	Slightly do not think so	Do not think so	Not filled in	
Q 3-4	Think it very much	2	5	3	0	0	0	10
	Slightly think so	4	9	5	4	1	0	23
	Cannot say either	6	11	25	1	5	0	48
	Slightly do not think so	9	12	9	8	4	0	42
	Do not think so	9	1	12	7	13	0	42

Not filled in	0	0	0	1	0	1	2
Total	30	38	54	21	23	1	167

Real number	Think so	Do not think so	Total
Think so	20	5	25
Do not think so	31	32	63
Total	51	37	88

Expectation	Think so	Do not think so	Total
Think so	14.48863636	10.51136364	25
Do not think so	36.51136364	26.48863636	63
Total	51	37	88

Statistic (χ^2 value)	6.964880847
Rejection region (1% significance level)	Z > 6.6349

The null hypothesis is rejected with 1% significance level. It can be said that if they feel that they cannot share enough time to prepare for teaching because of the workload for the guidance of club activities, they think that they want to have a person to consult with in guiding club activities.

Null Hypothesis: A-7 Even if they feel quite tired because of the activity on holiday, they do not think that they want to have a person to consult with in guiding club activities.

Table 3.7: Summary table concerning Null Hypothesis A-7

		Q 3-8						Total
		Think it very much	Slightly think so	Cannot say either	Slightly do not think so	Do not think so	Not filled in	
Q 3-5	Think it very much	7	7	6	3	3	0	26
	Slightly think so	6	14	14	3	2	0	39
	Cannot say either	7	5	22	2	5	0	41
	Slightly do not think so	5	9	7	6	2	0	29
	Do not think so	5	3	4	7	11	0	30
	Not filled in	0	0	1	0	0	1	2
Total		30	38	54	21	23	1	167

Real number	Think so	Do not think so	Total
Think so	34	11	45
Do not think so	22	26	48
Total	56	37	93

Expectation	Think so	Do not think so	Total
Think so	27.09677419	17.90322581	45
Do not think so	28.90322581	19.09677419	48
Total	56	37	93

Statistic (χ^2 value)	8.564647683
Rejection region (1% significance level)	Z > 6.6349

The null hypothesis is rejected with 1% significance level. It can be said that if they feel quite tired because of the activity on holiday, they think that they want to

have a person to consult with in guiding club activities.

Null Hypothesis: A-8 Even when they have a hard time for the mental guidance, they do not think that it is better for the professionals to guide club activities.

Table 3.8: Summary table concerning Null Hypothesis A-8

		Q 3-2						Total
		Think it very much	Slightly think so	Cannot say either	Slightly do not think so	Do not think so	Not filled in	
Q 3-7	Think it very much	12	6	4	0	0	0	22
	Slightly think so	31	15	5	0	2	0	53
	Cannot say either	24	13	10	1	2	0	50
	Slightly do not think so	9	5	4	1	1	0	20
	Do not think so	10	6	2	0	2	0	20
	Not filled in	0	0	1	0	0	1	2
Total		86	45	26	2	7	1	167

Real number	Think so	Do not think so	Total
Think so	64	2	66
Do not think so	30	4	34
Total	94	6	100

Expectation	Think so	Do not think so	Total
Think so	62.04	3.96	66
Do not think so	31.96	2.04	34
Total	94	6	100

Statistic (χ^2 value)	3.035359856
Rejection region (9% significance level)	$Z > 2.874373$

The null hypothesis is rejected with 9% significance level. It can be said that when they have a hard time for the mental guidance, they think that it is better for the professionals to guide club activities.

Null Hypothesis: B-1 In the technical course, teachers in charge of club activities do not spare a lot of time.

Table 3.9: Summary table concerning Null Hypothesis B-1

		Q 1-2-2-6																			N o t f i n d i n	T o t a l	
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18			19
Q 1 - 2	Ordinary Course	1	2	1	1	9	1	9	8	1	7	1	0	1	4	1	4	0	2	1	1	4	130
	Ordinary/Technical course	0	2	7	3	1	3	4	1	2	1	4	0	4	0	1	1	1	0	0	2	37	
Total		1	2	1	1	1	1	1	9	1	8	1	4	1	8	1	5	1	3	1	1	6	167

Real number	0-80	81-320	Total
Ordinary Course	95	31	126
Ordinary/Technical course	23	12	35
Total	118	43	161

Expectation	0-80	81-320	Total
Ordinary Course	92.34782609	33.65217391	126
Ordinary/Technical course	25.65217391	9.347826087	35
Total	118	43	161

Statistic (χ^2 value)	1.311875356
Rejection region (1% significance level)	Z <6.6349

The null hypothesis is not rejected. It can be said that in the technical course, teachers in charge of club activities do not spare a lot of time.

Null Hypothesis: B-2 Even if where the club activities are active, teachers in charge of club activities do not spare a lot of time.

Table 3.10: Summary table concerning Null Hypothesis B-2

		Q 1-2-2-6																			Total		
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		19	
Q	Yes	0	4	6	3	7	7	8	6	14	6	10	1	6	1	0	4	1	3	1	1	1	9

1 - 2 - 5	Cannot say either	0	1	8	9	1	5	4	3	4	2	3	0	1	0	0	1	0	0	0	0	3	5
	No	1	7	3	2	2	2	1	0	0	0	1	0	1	0	0	0	0	0	0	0	1	2
	Not filed in	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Total		1	2	1	1	1	1	1	9	1	8	1	1	8	1	0	5	1	3	1	1	6	1
			2	7	4	0	4	3		8	8	4										6	6
																							7

Real number	1-90	91-320	Total
Yes	61	29	90
No	17	3	20
Total	78	32	110

Expectation	1-90	91-320	Total
Yes	63.81818182	26.18181818	90
No	14.18181818	5.818181818	20
Total	78	32	110

Statistic (χ^2 value)	2.352875712
Rejection region (1% significance level)	Z < 6.6349

The null hypothesis is not rejected. It can be said that even if where the club activities are active, teachers in charge of club activities do not spare a lot of time.

Null Hypothesis: B-3 Even if where the club is strong enough to participate in the national sports match, they do not feel worthwhile to guide club activities.

Table 3.11: Summary table concerning Null Hypothesis B-3

		Q 3-1						Total
		Think it very much	Slightly think so	Cannot say either	Slightly do not think so	Do not think so	Not filled in	
Q 1-2-2-5	Yes	20	9	8	2	3	0	42
	Cannot say either	7	7	10	0	2	0	26
	No	11	32	32	11	10	1	97
	Not filled in	0	0	2	0	0	0	2
Total		38	48	52	13	15	1	167

Real number	Think so	Do not think so	Total
Yes	29	5	34
No	43	21	64
Total	72	26	98

Expectation	Think so	Do not think so	Total
Yes	24.97959184	9.020408163	34
No	47.02040816	16.97959184	64
Total	72	26	98

Statistic (χ^2 value)	3.734683336
Rejection region (6% significance level)	$Z > 3.537385$

The null hypothesis is rejected with 6% significance level. It can be said that where the club is strong enough to participate in the national sports match, they feel worthwhile to guide club activities.

Null Hypothesis: B-4 When they feel worthwhile to guide club activities, they do

not feel it burden to guide club activities

Table 3.12: Summary table concerning Null Hypothesis B-4

		Q 2-6						Total
		Think it very much	Slightly think so	Cannot say either	Slightly do not think so	Do not think so	Not filled in	
Q 3-1	Think it very much	0	2	4	7	25	0	38
	Slightly think so	2	12	12	16	6	0	48
	Cannot say either	3	7	20	13	7	2	52
	Slightly do not think so	6	4	1	0	1	1	13
	Do not think so	5	4	0	2	4	0	15
	Not filled in	0	0	0	0	0	1	1
Total		16	29	37	38	43	4	167

Real number	Think so	Do not think so	Total
Important	16	54	70
Not important	19	7	26
Total	35	61	96

Expectation	Think so	Do not think so	Total
Important	25.52083333	44.47916667	70
Not important	9.479166667	16.52083333	26
Total	35	61	96

Statistic (χ^2 value)	20.63927117
Rejection region (1% significance level)	Z > 6.6349

The null hypothesis is rejected with 1% significance level. It can be said that when they feel worthwhile to guide club activities, they feel it burden to guide club activities.

Null Hypothesis: B-5 When they feel worthwhile to guide club activities, they do not think that it is better for the professionals to guide club activities.

Table 3.13: Summary table concerning Null Hypothesis B-5

		Q 3-2						Total
		Think it very much	Slightly think so	Cannot say either	Slightly do not think so	Do not think so	Not filled in	
Q 3-1	Think it very much	24	8	4	1	1	0	38
	Slightly think so	23	15	10	0	0	0	48
	Cannot say either	24	17	11	0	0	0	52
	Slightly do not think so	8	2	1	0	2	0	13
	Do not think so	7	3	0	1	4	0	15
	Not filled in	0	0	0	0	0	1	1
Total		86	45	26	2	7	1	167

Real number	Think so	Do not think so	Total
Important	70	2	72
Not important	20	7	27
Total	90	9	99

Expectation	Think so	Do not think so	Total
Important	65.45454545	6.545454545	72

Not important	24.54545455	2.454545455	27
Total	90	9	99

Statistic (χ^2 value)	12.73148148
Rejection region (1% significance level)	$Z > 6.6349$

The null hypothesis is rejected with 1% significance level. It can be said that even when they feel worthwhile to guide club activities, they think that it is better for the professionals to guide club activities.

Null Hypothesis: B-6 Even if the club activity is active, they do not feel worthwhile to guide club activities.

Table 3.14: Summary table concerning Null Hypothesis B-6

		Q 3-2						Total
		Think it very much	Slightly think so	Cannot say either	Slightly do not think so	Do not think so	Not filled in	
Q 1-2-5	Yes	33	25	20	4	7	1	90
	Cannot say either	5	19	21	7	3	0	55
	No	0	4	10	2	5	0	21
	Not filed in	0	0	1	0	0	0	1
Total		38	48	52	13	15	1	167

Real number	Think so	Do not think so	Total
Yes	58	11	69
No	4	7	11
Total	62	18	80

Expectation	Think so	Do not think so	Total
Yes	53.475	15.525	69
No	8.525	2.475	11
Total	62	18	80

Statistic (χ^2 value)	12.37659437
Rejection region (1% significance level)	Z > 6.6349

The null hypothesis is rejected with 1% significance level. It can be said that if the club activity is active, they feel worthwhile to guide club activities.

4 Remarks

The Results for Hypothesis Testing are as follows.

Main issue A consists of 8 sub issues (A-1~A-8). 7 of their Null Hypotheses (A-2~A-8) were rejected and the main issue A was insisted rather clearly. 6 sub issues were set for the main issue B. Four of their Null Hypotheses were rejected (B-3~B-6). Two of them were not rejected. It can be said that the main issue B was insisted for the main part.

5 Conclusion

High School teachers in Japan are sending very busy days on their daily works including teaching, support for the club activities and deskwork. Among them, they share a lot of time for managing the club actives of students compared with other countries. 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. In this paper, a questionnaire investigation is executed to the high school teachers at Miyagi Prefecture in Japan in order to clarify their current condition and their consciousness, and to seek the possibility of utilizing school social worker for their support. Hypothesis testing was executed based on that. We have set two such main issues as:

A When they have a hard time in guiding club activities, they think that they want to have a person to consult with or it is better for the professionals to guide club activities.

B When they feel worthwhile to guide club activities, they feel less burden for it.

For the A part, it consists of 8 sub issues and 7 of their Null Hypotheses were rejected and the main issue A was insisted rather clearly. For the B part, 6 sub issues were set and four of their Null Hypotheses were rejected. Two of them were not rejected. It can be said that the main issue B was insisted for the main part.

Further study on this should be executed such as multivariate analysis. Various cases should be investigated here after.

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References

- [1] Benesse Education Research Institute, The 5th Basic Investigation Report about Instruction for Learning (Elementary School, Junior High School), (2010),
http://benesse.jp/berd/center/open/report/shidou_kihon5/sc_hon/index.html
- [2] Benesse Education Research Institute, The 5th Basic Investigation Report about Instruction for Learning (High School), (2010).
http://benesse.jp/berd/center/open/report/shidou_kihon5/kou_hon/index.html
- [3] Hideyuki Konyuba, Analysis on teachers' workload and development of school organization: focusing on the school club activities, *National Institute for Educational Policy Research*, **140**, (2011), 181-193.
- [4] Kazuo Yonekawa, The role of school social worker for mental health of a junior high school teacher, *Bulletin of Faculty of Literature*, Kurume University, **10**(11), (2011), 7-15.
- [5] Michael Stokely Kelly, Stephanie Cosner Berzin, Andy Frey, Michelle Alvarez, Gary Shaffer and Kimberly O'Brien, The State of School Social Work: Findings from the National School Social Work Survey, *School Mental Health*, **2**(3), (September, 2010), 132-141.

Appendix

Questionnaire about the Club Activities at High School

Questionnaire about the Club Activities at High School

1. Please select the appropriate item in each column.

1	① Private	② Public		
2	① Ordinary course	② Technical course	③ Commercial course	④ Miscellaneous ()
(1) Select the club you are in charge of.				
Sports club	① Baseball ② Tennis ③ Rugby ④ Soccer ⑤ Track-and-field ⑥ Hockey ⑦ Archery ⑧ Golf ⑨ Kyudo (Japanese Archery) ⑩ Horsemanship ⑪ Basketball ⑫ Badminton ⑬ Heavy gymnastics ⑭ Volleyball ⑮ Table tennis ⑯ Judo ⑰ Kendo ⑱ Alpine ⑲ Skiing ⑳ Swimming ㉑ Miscellaneous ()			
Culture club	① Human sciences ② Research section ③ Living thing research section ④ Chemistry research section ⑤ Physics research ⑥ Mathematics research ⑦ Brass ensemble ⑧ Instrumental music ⑨ Literature ⑩ Shogi (Japanese Chess) ⑪ Art ⑫ Calligraphy ⑬ Railroad research ⑭ ESS ⑮ Newspaper ⑯ Broadcast Department ⑰ Classic ⑱ Theater ⑲ Debating ⑳ Photo department ㉑ Radio ㉒ Movie research ㉓ Miscellaneous ()			
(2) How about the sort of job?				
3	① Adviser	② Deputy Adviser	③ Miscellaneous ()	
Is the club strong enough to participate in the national sports match?				
4	① Yes		② Cannot say either	
Is the club activity active?				
5	① Yes		② Cannot say either	
How much time do you spare for the club activity (include moving time)				
6	() hours / month			

2. We ask you a consciousness for the daily works.

	1 Think it very much	2 Slightly think so	3 Cannot say either	4 Slightly do not think so	5 Do not think so
1.	Feel it burden to teach				1 2 3 4 5
2.	Feel it burden to prepare for teaching				1 2 3 4 5
3.	Feel it burden to instruct for learning				1 2 3 4 5
4.	Feel it burden to handle the students' performance				1 2 3 4 5
5.	Feel it burden to guide students				1 2 3 4 5
6.	Feel it burden to guide club activities				1 2 3 4 5
7.	Feel it burden to guide committee				1 2 3 4 5
8.	Feel it burden to manage the class				1 2 3 4 5
9.	Feel it burden to deal with meeting, advance arrangement				1 2 3 4 5
10.	Feel it burden to deal with parents				1 2 3 4 5

3. We ask you a consciousness for guiding the club activities.

1.	Feel worthwhile to guide club activities.				1 2 3 4 5
2.	It is better for the professionals to guide club activities.				1 2 3 4 5
3.	I do not know the club field precisely that I take charge of.				1 2 3 4 5
4.	I cannot share enough time to prepare for teaching because of the workload for the guidance of club activities.				1 2 3 4 5
5.	Quite tired because of the activity on holiday.				1 2 3 4 5
6.	Have a hard time for the technical guidance.				1 2 3 4 5
7.	Have a hard time for the mental guidance.				1 2 3 4 5
8.	Want to have a person to consult with in guiding club activities.				1 2 3 4 5

4. We ask questions about yourself.

1	Sex	① Male	② Female				
2	Age	① 20~29	② 30~39	③ 40~49	④ 50~59	⑤ More than 60	
3	Position.	① Principal	② Deputy Principal	③ A person in charge of educational affairs	④ Teacher	⑤ Lecture	⑥ Assistant
4	Experience as a teacher.	① Within 1 year	② 1~2 years	③ 3~4 years	④ 5~9 years	⑤ 10 years or more	
5	How many years are you working for the present school?	① Within 1 year	② 1~2 years	③ 3~4 years	④ 5~9 years	⑤ 10 years or more	
6	Blood Type.	① A Type	② B Type	③ O Type	④ AB Type	⑤ Unknown	
7	Are you married?	① Single	② Married				
8	How many children do you have?	① Member-of-society (daughter who got married) () people	② College student () people	③ High school student () people	④ Junior high school student () people	⑤ Schoolchild () people	⑥ Less than kindergarten () people
9	Are you positive to do anything?	③ Positive		② Cannot choose either	① Not positive		
10	Do you like to be alone?	⑤ Think it so much		④ Slightly think it so	③ Cannot choose either	② Slightly do not think it so	① Not think it so
11	How do you spend holidays?	① Outdoor	② Indoor		③ Cannot choose either		
12	What is most important to you? Choose only one.	① Affection	② Money	③ Honor	④ Clothes/Eating/House	⑤ Self-realization	⑥ Miscellaneous ()
13	Do you have a brother?	① Yes		② No			
14	In what situation among brothers?	① The eldest son or the eldest daughter	② Between ① and ③	③ Youngest child			
(1) We ask questions about your current condition.							
		⑤ Very good	④ Rather good	③ Ordinary level	② Not so good	① Bad	
15	How about your physical condition?	⑤	④	③	②	①	
16	Is your work progressing smoothly?	⑤	④	③	②	①	
17	Do you living a full life?	⑤	④	③	②	①	