A Study of Age Distribution of Aboriginal Teachers in Taiwan

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Abstract: - The purpose of this study was to analyze the age distribution of aboriginal teachers in Taiwan. Teachers' professional is the fundamental of education, and teachers play the important role in education environment. Aboriginal teachers' multiple roles had inherited the blood of indigenous culture. Their education professional also play a role to extend ethnic culture. The blend of both culture and individual needs force them become a professional learner in the teacher preparation program and also in the teaching professional field. The purpose of this study would explore age distributions of in-service aboriginal teachers in k-12 schools, and the k-12 schools inclusive of kindergartens, elementary schools, junior high schools, senior high schools and senior vocational schools. In this study, a metadata analysis method was applied for exploring the age distribution of in-service aboriginal teachers, the research data would based on project report of teacher education statistics supported by Ministry of Education, Taiwan, R.O.C. The research population is nationwide in-service aboriginal teachers in k-12 schools, total 2,192 at year 2010. About statistical analysis, normal distribution test would be used for analyzing data in this research, inclusive of arithmetic mean, skewness, kurtosis, etc., whether the age distribution is nearly normal distribution curve, positively skewed, or negatively skewed, or generate notch. Finally, about the results of statistic, the age distribution of aboriginal teachers would be presented in the conclusions of this research.

Key-Words: - aboriginal teachers; teacher education statistics, age distribution.

1 Introduction

Teachers' professional is the fundamental of education, and teachers play the important role in education environment.

Aboriginal teachers' multiple roles had inherited the blood of indigenous culture. Their education professional also play a role to extend ethnic culture. The blend of both culture and individual needs force them become a professional learner in the teacher preparation program and also in the teaching professional field.

In this paper, the research group would based on the education statistics data to analyze the age distribution of aboriginal teachers in k-12 schools, and the k-12 schools inclusive of kindergartens, elementary schools, junior high schools, senior high schools and senior vocational schools.

In this study, a metadata analysis method was applied for exploring the age distribution of in-service aboriginal teachers, the results of age distribution would be as the reference for aboriginal teacher educational strategy development.

The research data collected from 2010 project report of teacher education statistics supported by Ministry of Education, Taiwan, R.O.C.

With the time elapsed that the in-service teachers must to retire and supplement continuously with regular cycle. Generally recognized, novice teachers' teaching experience is lesser than elder teachers, the middle-aged and elder teachers with full extensive experience in teaching. And the novice teachers can enhance self-professional development through communicate with experienced teachers. Therefore, the novice teachers will gradually grow as a professional and experienced teacher with increased age.

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Most developed world countries have accepted the chronological age of 65 years as a definition of 'elderly' or older person. At the moment, there is no United Nations standard numerical criterion, but the UN agreed cutoff is 60+ years to refer to the older population [1]. In Taiwan, In accordance with regulations, the faculty mandatory retirement age at 65 years old, or can apply for retirement before 65 years old according to individual's years of work experience.

Hence, The researcher considered that the proportions of novice or elder teachers should be lesser than middle-aged teachers in the educational environment, by retire and supplement continuously with a certain regular proportions.

In this research, the age distribution of aboriginal teachers would be analyzed, to understand the age distribution, whether the age distribution is nearly normal distribution curve, or generate notch, or age distribution tends to aging, or ages distribution tend to be younger. The expected of in-service aboriginal teachers' age distribution is nearly or similar to normal distribution curve. The graph of normal distribution shown in figure 1.

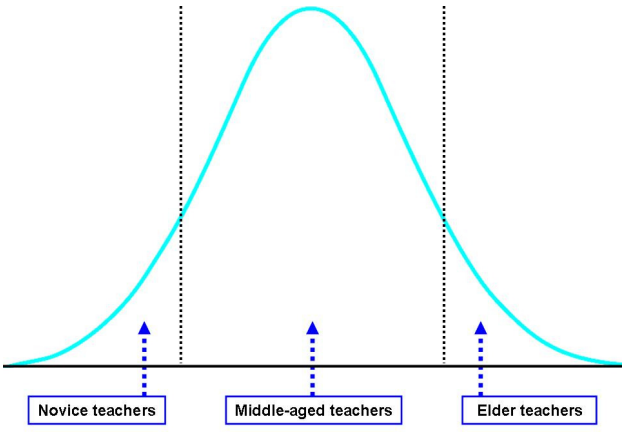

Fig. 1 Expected Age Distribution of In-service Aboriginal Teachers

2 Aboriginal tribe and aboriginal teachers in K-12 schools

About the main aboriginal peoples of Taiwan, there are 14 kinds of aboriginal tribe inclusive of Amis, Atayal, Paiwan, Bunun, Puyuma, Rukai, Tsou, Saisiyat, Yami, Thao, Kavalan, Truku, Sakizaya, and Sediq. The graph of aboriginal peoples of Taiwan as shown in figure 2. And the traditional residence areas of aboriginal peoples are eastern half of Taiwan and mountain areas, the residence area distributed as shown in figure 3 [2].

In this research, the age distribution of in-service aboriginal teachers would be analyzed, the in-service teachers in k-12 schools indicated the teachers' first registered specialty in k-12 education. The research data had been divided into five parts: kindergartens, elementary schools, junior high schools, senior high schools and senior vocational schools.

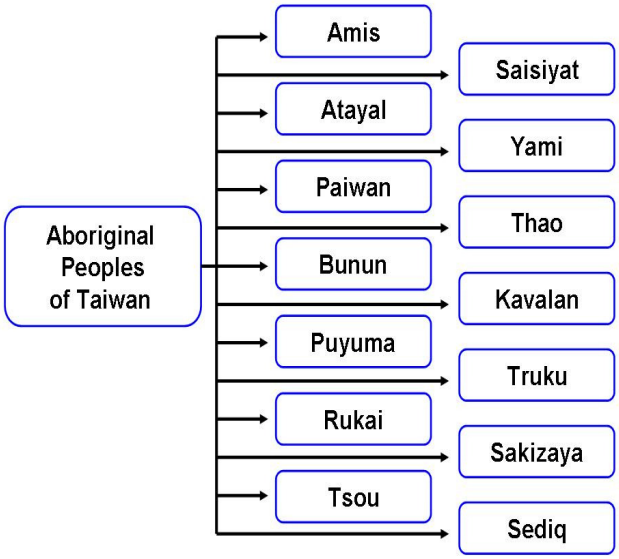

Fig. 2 Aboriginal Peoples of Taiwan

Fig. 3 Traditional residence area of aboriginal peoples in Taiwan [2]

3 Problem Solution

In this session, the research methodology, research tools, and statistical analysis are reported. The research findings are also presented as follows.

3.1 Methodology

A metadata analysis method was applied in this study for exploring the age distribution of aboriginal teachers in k-12 schools. In this research, the age

data of aboriginal teachers based on the 2010 project report of Teacher Education Statistics. The project supported by Ministry of Education, Republic of China. The research population is nationwide in-service aboriginal teachers in k-12 schools, total 2,192 at year 2010.

3.2 Research Tools

In this research, the metadata analysis as the research tool in this research. And the data structure is listed as followings:

- Name of the school level
- Distribution of age group
- Number of people
- Average of age

About the data coding, if the teacher's age under 29 coded as 1, age around 30~34 coded as 2, age around 35~39 coded as 3, age around 40~44 coded as 5, age around 45~50 coded as 6, age around 55~59 coded as 7, and age over 60 coded as 8. Finally, recorded number of people among age group.

All the research data was based on the project report of teacher education statistics and the project had been supported by the Ministry of Education, Taiwan, R.O.C. So this tool and data collected are accurate and effective.

3.3 Statistical Analysis

Normal distribution test are used for analyzing data in this research, inclusive of skewness, kurtosis, arithmetic mean. The hypothesis was defined for testing.

- *Hypothesis 1*

The average age of each school level aboriginal teachers reveals no significant difference.

- *Hypothesis 2*

The skewness of each school level aboriginal teachers reveals no significant difference.

- *Hypothesis 3*

The kurtosis of each school level aboriginal teachers reveals no significant difference.

- *Hypothesis 4*

The average age of aboriginal teachers and general teachers reveals no significant difference.

Based on four hypotheses were set for statistical test. The test result of the first hypothesis would provide the answer about whether the average age of each school level reveals no significant difference. If not, what is the differences?

The test result of the second hypothesis would provide the answer about whether the skewness of each school level reveals no significant difference. If not, what is the differences?

The test result of the third hypothesis would provide the answer about whether the Kurtosis of each school level reveals no significant difference. If not, what is the differences?

The test result of the fourth hypothesis would provide the answer about whether the average age of aboriginal teachers and general teachers reveals no significant difference. If not, what is the differences?

About the general teachers indicated the teachers are non-aboriginal teachers and first registered specialty in k-12 education. The data of general teachers based on the Yearbook of Teacher Education Statistics published from Ministry of Education, Republic of China [3].

3.4 Findings

The results of statistic are presented as follows, inclusive of: descriptive results and hypothesis test results.

3.4.1. Descriptive Statistics results

According to age data of aboriginal teachers collected from the project report of teacher education statistics, the tribe proportion of aboriginal teachers were listed in Table 1. And results of normal distribution test inclusive of average age, arithmetic mean, skewness, and kurtosis, were listed in Table 2.

Table 1 The tribe proportion of aboriginal teachers

Tribe	Number of people	Proportion
Total	2192	100%
Amis	506	23.0%
Atayal	546	24.9%
Paiwan	494	22.5%
Bunun	239	10.9%
Puyuma	104	4.74%
Rukai	70	3.19%
Tsou	48	2.1%
Saisiyat	21	0.9%
Yamiv	12	0.5%
Thao	5	0.2%
Kavalan	1	0.04%
Truku	91	4.1%
Sakizaya	1	0.04%
Sediq	16	0.7%
others	38	1.6%

These results of statistic, each tribe proportion shown as the table 1. There are four aboriginal tribes that accounted for 80% of aboriginal teachers. The four aboriginal tribes inclusive of Amis (23.0%), Atayal (24.9%), Paiwan (22.5%), and Bunun (10.9%).

The results of normal distribution test, the

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mean around 3.13-3.80; all the skewness are positively skewed, the value around 0.163-0.949; and most the kurtosis are platykurtic, the value around (-0.531) ~ (-0.841). In addition, the kurtosis value of senior high school is positive. And the results show all field are not the normal distribution.

About the histograms, the figure 3 shows the normal distribution test results of aboriginal teachers' in k-12 schools and normal curve presented on histograms bottom. And the figure 4 ~ figure 10 show the normal distribution test results of each classification in k-12 schools.

Table 2 Normal distribution test results of aboriginal teachers

ITEM	Age	Mean	Skewness	Kurtosis
Total	39.06	3.45	0.308	-0.588
Male	40.79	3.78	0.170	-0.683
Female	37.71	3.19	0.365	-0.531
kindergarten	40.79	3.80	0.171	-0.713
elementary school	39.26	3.50	0.163	-0.610
junior high school	38.67	3.35	0.534	-0.545
senior high school	37.53	3.13	0.949	0.380
senior vocational school	39.20	3.42	0.571	-0.841

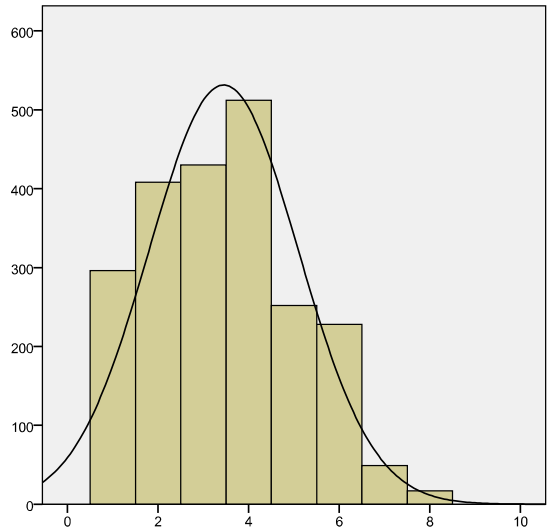

Fig. 3 Normal distribution test of aboriginal teachers' first registered specialty in k-12 schools

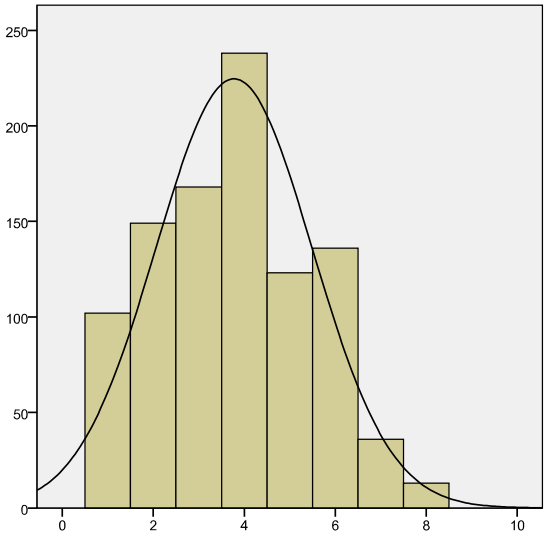

Fig. 4 Normal distribution test of male aboriginal teachers' first registered specialty in k-12 schools

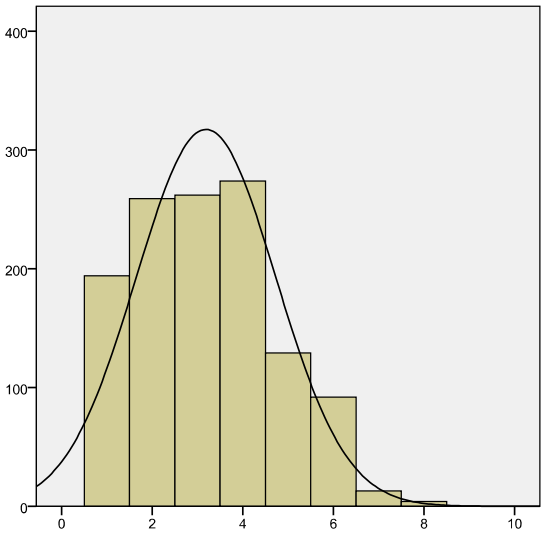

Fig. 5 Normal distribution test of female aboriginal teachers' first registered specialty in k-12 schools

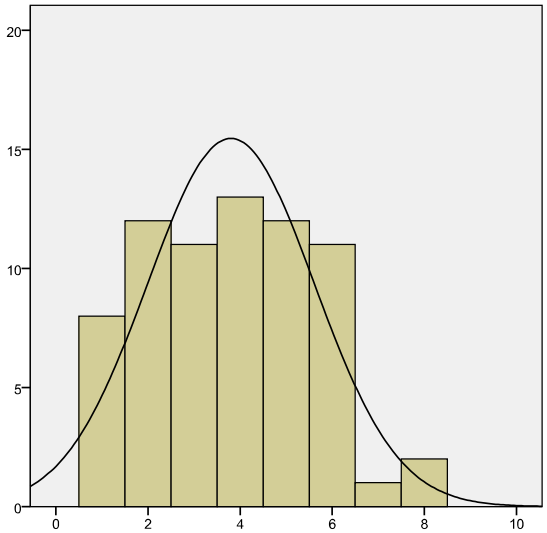

Fig. 6 Normal distribution test of aboriginal teachers' first registered specialty in kindergarten

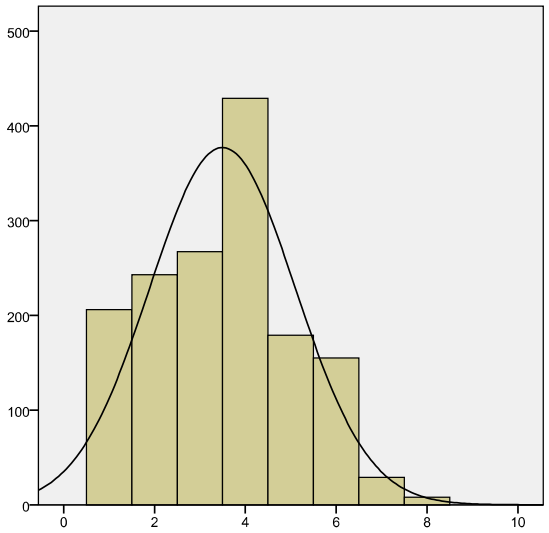

Fig. 7 Normal distribution test of aboriginal teachers' first registered specialty in elementary school

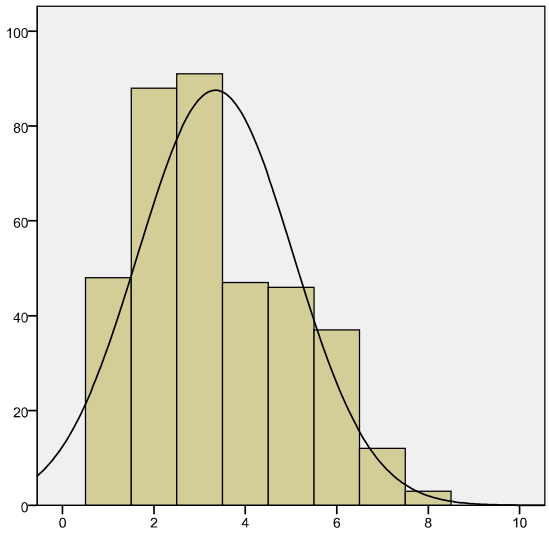

Fig. 8 Normal distribution test of aboriginal teachers' first registered specialty in junior high school

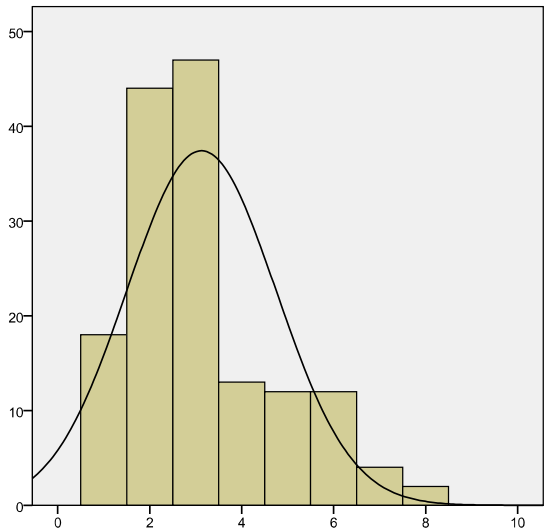

Fig. 9 Normal distribution test of aboriginal teachers' first registered specialty in senior high school

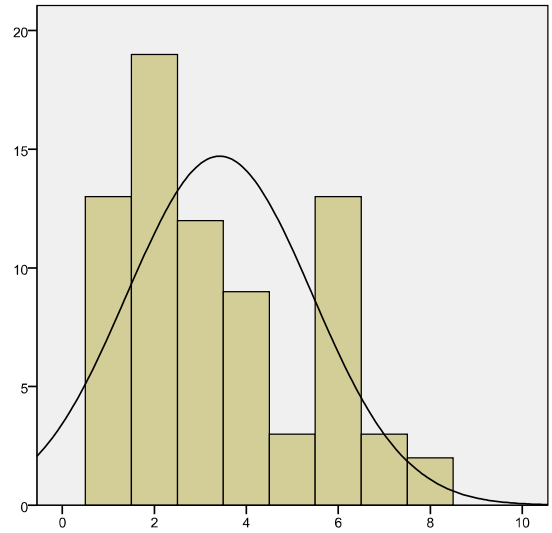

Fig. 10 Normal distribution test of aboriginal teachers' first registered specialty in senior vocational school

About the normal distribution test of aboriginal teachers, the figure 3, 4, 5 shown skewness are positively skewed, that indicated the ages distribution tend to be younger.

And the figure 6, 7, 8, 9 shown skewness are positively skewed, the value around 0.163-0.571, that indicated the ages distribution tend to be younger. And the histograms show the curves are not the normal distribution. In addition, the figure 10 shown the age distribution of senior vocational school, there are a notch between 4~6 apparently.

3.4.2. Hypothesis test results

Hypothesis 1

About the average age of each school level aboriginal teachers reveals no significant difference. The average age of each school level were listed in Table 2. The results of one-sample test, shows the average age of each school level aboriginal teachers reveals no significant difference. The detailed data as shows in Table 3.

Table 3 one-sample test Results of age average

One-Sample Test						
	Test Value = 39.06					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference Lower	Upper
School level	.153	6	**.884**	.07571	-1.1373	1.2887

Hypothesis 2

About the skewness of each school level aboriginal teachers reveals no significant difference. The skewness of each school level were listed in Table 2. The results of one-sample test, shows the skewness of each school level aboriginal teachers reveals no

significant difference. The detailed data as shows in Table 4.

Table 4 one-sample test Results of skewness

	One-Sample Test					
	Test Value = 0.308					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference Lower	Upper
School level	.995	6	.358	.10957	-.15984	0.37898

Hypothesis 3

About the kurtosis of each school level aboriginal teachers reveals no significant difference. The kurtosis of each school level were listed in Table 2. The results of one-sample test, shows the kurtosis of each school level aboriginal teachers reveals no significant difference. The detailed data as shows in Table 5.

Table 5 one-sample test Results of kurtosis

	One-Sample Test					
	Test Value = -0.588					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference Lower	Upper
School level	.535	6	.612	0.08185	-0.29274	0.45645

Hypothesis 4

About the average age of aboriginal teachers and general teachers reveals no significant difference. The average age of aboriginal teachers and general teachers were listed in Table 6. The average age data of general teachers based on the Yearbook of Teacher Education Statistics published from Ministry of Education, Republic of China [3].

The results of independent samples test, shows the average age of aboriginal teachers and general teachers reveals no significant difference. The detailed data as shows in Table 7.

Table 6 The average age of aboriginal teachers and general teachers

Aboriginal teachers		General teachers	
Classification	Average age	Classification	Average age
Total	39.06	Total	39.22
Male	40.79	Male	40.38
Female	37.71	Female	38.65
kindergarten	40.79	kindergarten	38.92
elementary school	39.26	elementary school	39.27
junior high school	38.67	junior high school	38.27
senior high school	37.53	senior high school	40.03
senior vocational school	39.20	senior vocational school	40.27

Table 7 Independent Samples Test Results of age average

Aboriginal teachers		General teachers		t
N	mean	Std. Deviation	N	mean	Std. Deviation	
8	39.126	1.2145	8	39.376	0.777	-0.490

p>.05

4 Conclusion

According to the results of statistic, conclusions are presented in this section. The purpose of this study was to analyze the age distribution of aboriginal teachers in Taiwan, the research data collected from project report of teacher education statistics. The results of research shows as follows:

1. These results of statistic, each tribe proportion shown as the table 1. There are four aboriginal tribes that accounted for 80% of aboriginal teachers. The four aboriginal tribes inclusive of Amis (23.0%), Atayal (24.9%), Paiwan (22.5%), and Bunun (10.9%).
2. All the normal distribution test of skewness are positively skewed, that indicated the ages distribution tend to be younger.
3. Based the results of statistic, the average age of each school level aboriginal teachers reveals no significant difference.
4. Based the results of statistic, the skewness of each school level aboriginal teachers reveals no significant difference.
5. Based the results of statistic, the kurtosis of each school level aboriginal teachers reveals no significant difference.
6. Based the results of statistic, the average age of aboriginal teachers and general teachers reveals no significant difference.

From the results of this research, the research group found that the age distribution of aboriginal teachers are not normal distribution curve, and the curve of age distribution of senior vocational school generate notch. About the reason that age distribution of senior vocational school generate notch, this issue would be left to the follow-up study.

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